NetworkWorld

The leader in network knowledge ■ www.nwfusion.com   April 28, 2003 ■ Volume 20, Number 17

Privacy concerns dog initial RFID plans

■ BY ANN BEDNARZ

Philips Electronics made a splash last month when it announced clothing retailer Benetton would outfit its garments and shipping containers with wireless-enabled labels containing microchip transmitters that Philips developed.

But the splash turned into a tidal wave of negative publicity as privacy groups raised fears that the transmitter would let the retailer identify and track customers.

One consumer advocacy group called for a boycott of Benetton, saying sensors hidden in the retailer's clothing could be used to create a global surveillance network. Another privacy advocacy firm started a campaign aimed at stopping retailers from selling consumer goods containing live tracking devices.

The backlash was enough to cause Benetton to retreat from its commitment to the technology in question: radio frequency identification (RFID).

With RFID, the signals that transmitters emit are picked up by strategically located sensors, which extract item-identification

InteropNet Labs

Exclusive preview ILabs tests show wireless security not fully baked. **Page 63**

More Interop news inside

● **Aprisma, BMC, Fluke and Smarts** to show off management wares. Page 12.

● **New Foundry BigIron MG8 Ethernet switch** supports a full 10G. Page 14.

● **Adtran takes aim at Cisco with VPN-enabled routers.** Page 22.

● **Sprint emphasizes customer savings with Frame Relay over DSL service launch.** Page 37.

● **A round up of remote-office products, such as EmergeCore's IT-100 box, debuting at the show.** Page 45.

Stay on top of all the latest news from the show at www.nwfusion.com, DocFinder: 5653.

Fluke OptiView

Foundry BigIron MG8

EmergeCore IT-100

GIACOMO MARCHESI

Showtime for VoIP, security

■ BY PHIL HOCHMUTH AND TIM GREENE

LAS VEGAS — 3Com and Cisco will marshal a parade of IP telephony vendors pitching new wares this week at NetWorld+ Interop as the industry moves to make enterprise voice over IP more scalable and IP phones more mobile.

Security hardware makers also will be prominent as they debut gear upgraded for detecting and reacting to network intrusions, and roll out Secure Sockets Layer (SSL)-based products designed

to ease deployment of VPNs.

With about 275 exhibitors scheduled, this week's N+I — the only Interop in the U.S. this year — will be about half the size of last year's Las Vegas show, which was half the size of the 2001 show. Nevertheless, interest in VoIP, Wi-Fi and VPN infrastructure products is expected to be strong.

Among the announcements:

● 3Com, with its Voice Core Exchange V7000, wants to enter the large-scale VoIP product market.

NETWORLD +INTEROP

■ **SPECIAL REPORT:** GETTING CONTROL OF ENTERPRISE APPLICATIONS

All for one and one for all saves money

■ BY ANN BEDNARZ

Getting rid of a $4.5 million ERP system gone awry was supposed to be the first problem Robert Moon solved when he joined display products manufacturer ViewSonic as vice president of information service. But instead of replacing the company's troubled ERP system, Moon revived it.

Moon arrived at ViewSonic in early 2001 to find an array of heavily customized Oracle applications. The Walnut, Calif., company was running separate "instances," or versions, of Oracle's financial software in each of its three regional offices: one on Version 10.7 and two on Version 11.0.3.

Each office also had distinct procedures for managing accounts. Different offices had different methods of budgeting, recording and reporting financial transactions.
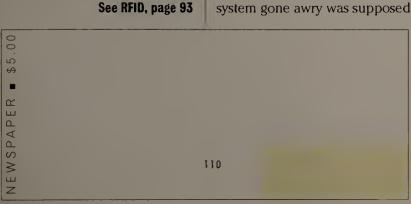
Reconciling these systems to produce quarterly and annual corporate reports was a manual chore that often took weeks to accomplish. It was enough of a nightmare to prompt ViewSonic executives to consider scrapping the company's Oracle investment
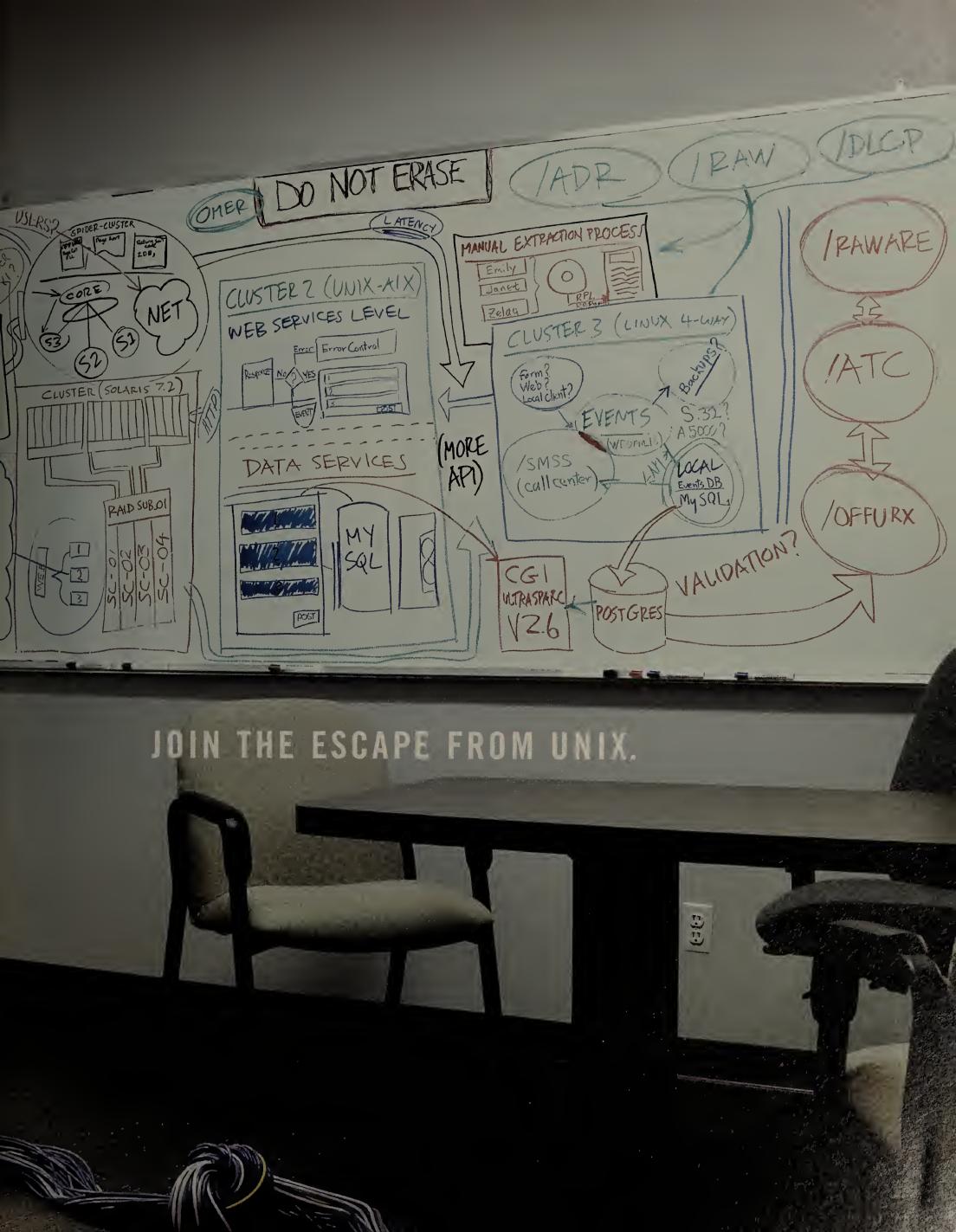
altogether. Until Moon came along.

"I pointed out it was not the software, it was the implementation that had been done incorrectly," Moon says. So the company spent $750,000 to migrate its ERP systems to a single, customization-free instance of Oracle 11i — a move that now is saving ViewSonic millions of dollars per year in personnel and systems costs.

ERP instance-consolidation projects such as the one ViewSonic

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4/28/03

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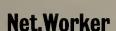
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Buyer's GUIDE NAS appliances

Trends in the world of network-attached storage. **Page 55.**

Snap Server wins our test of open source NAS appliances. **Page: 56.**

HP's StorageWorks, left, takes top honors in a test of midrange Windows-powered NAS devices. **Page 58.**

Feature: ILab engineers cook up 802.1X, iSCSI and MPLS tests. **Page 63.**

Review: WatchGuard's new firewall/VPN takes aim at the high end. **Page 69.**

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Interactive

N+I news
If you can't make it to the show this week, stay on top of all the news you need at our Interop breaking news page. Heading to Sin City? Check out our unabridged online N+I planner to see which keynote addresses, events and seminars you can't afford to miss. On the go? Download it to your PDA. **DocFinder: 5653**

Forum: MCI under Capellas
Is new CEO Michael Capellas a miracle worker or something less? What does the future hold for his company? **DocFinder: 5654**

Network-attached storage appliance Buyer's Guide
Get a complete online listing of all vendors and products from this week's Buyer's Guide on page 55. Use our online guide to narrow your search according to feature, or use our Compare-o-matic to compare products in various categories. **DocFinder: 5655**

Audio primer: Digital rights management
Find out what 10 things you need to know before implementing digital rights management in your company. **DocFinder: 4741**

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Columnists

Compendium
Microsoft spider reported in the wild
Fusion Executive Editor Adam Gaffin says a Microsoft spider is making its rounds, leaving some to wonder what a comparison between Microsoft's search engine and the Linux-driven Google would be like. **DocFinder: 5656**

Multimedia Exchange
New Windows Media 9 Series fun pack
Multimedia Editor Jason Meserve says Windows XP Creativity Packs are loaded with fun things, including the ability to append the track information for the current selection being played in Windows Media Player into your blog entry.
DocFinder: 5657

Small Business Tech
Novell woos small businesses
James Gaskin examines Small Business Suite for NetWare 6.5 and finds it full of new features. **DocFinder: 5658**

Digital Domicile
Invasion of the killer Bs
Mike Wolf says competition between 802.11b silicon vendors has resulted in a drastic decline in hardware prices.
DocFinder: 5659

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News Bits

Bulk e-mailers look to shake spam stigma

■ A coalition of e-mail service providers has announced plans for registries intended to separate the good bulk e-mailers from the spammers. The Email Service Provider Coalition, formed by the Network Advertising Initiative, counts among its members 30 companies that provide outsourced e-mail services or Internet advertising functions, including DoubleClick and Advertising.com. The group last week announced the blueprint for a registry standard that would include a certification process for companies sending out bulk e-mail. The coalition said the standard would be launched in six to nine months. Vendors that pass the certification would get a sort of seal of approval, an alternative to current blacklists and spam filters that sometimes ban legitimate e-mail vendors, said Hans Brondmo, senior vice president for strategy for Digital Impact and chairman of the ESPC technology working group. High-volume e-mailers would get a score similar to a credit rating, based on numbers of customer complaints, how many times people have to unsubscribe and other factors.

Computer virus exploits SARS fears

■ In the latest example of computer virus writers capitalizing on current events, an e-mail worm uses fears about Severe Acute Respiratory Syndrome to entice users to open a file attachment, which infects host machines and helps spread the virus to other machines on the Internet. The worm, W32/Coronex-A (Coronex), is a mass-mailer worm that uses Microsoft Outlook to send copies of itself to unsuspecting recipients, according to an alert from antivirus company Sophos. The e-mail can carry a variety of subject lines and messages relating to the deadly new respiratory illness. Greetings such as "SARS Virus," "I need your help," and "deaths virus," accompany messages containing the computer virus, according to antivirus software company Symantec. When opened, the attachment launches the virus, displaying a pop-up window with the message "corona virus."
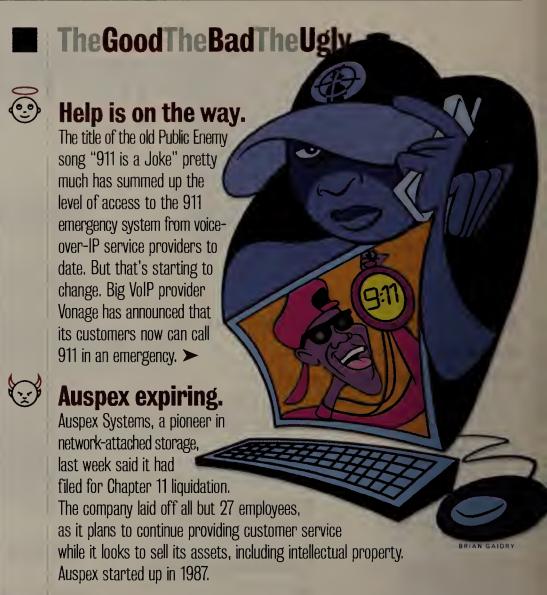
Tandberg to offer WebEx integration

■ Tandberg is attempting to bring together Web conferencing and videoconferencing with a new development deal with WebEx. As part of the deal, Tandberg will build in the ability for its Tandberg Management System Scheduler users to add a WebEx conference as part of an overall audio and videoconference reservation. TMS automatically would schedule the necessary resources with the WebEx service. Customers would need to establish and pay for the WebEx account separately. Data in the WebEx piece of

The Iraqi view on routing

RouterGod once again scoops the technology press with an interview with Muhammed Saeed al-Sahaf on policy-based routing: "Your packets are fragmented and their time to live has exceeded. . . . We will beat your packets with our shoes and roast your configs in hell!" *Find out what else the information minister knows at www.nwfusion.com, DocFinder: 5661.*

■ TheGoodTheBadTheUgly

BRIAN GAIDRY

☺ **Help is on the way.**
The title of the old Public Enemy song "911 is a Joke" pretty much has summed up the level of access to the 911 emergency system from voice-over-IP service providers to date. But that's starting to change. Big VoIP provider Vonage has announced that its customers now can call 911 in an emergency. ➤

😈 **Auspex expiring.**
Auspex Systems, a pioneer in network-attached storage, last week said it had filed for Chapter 11 liquidation. The company laid off all but 27 employees, as it plans to continue providing customer service while it looks to sell its assets, including intellectual property. Auspex started up in 1987.

🌐 **Fraud alert.** More proof that the Internet isn't all fun and games. The FBI has announced that a new Internet Fraud Complaint Center report found that the center referred 48,252 fraud complaints to federal, state and/or local law enforcement authorities last year, triple the number of referrals in 2001. According to the report, the total dollar loss from all referred fraud cases was $54 million, up from $17 million in 2001.

the conference will be available to phone participants with Web access and Tandberg video endpoints equipped with a PC or the company's DuoVideo technology, which lets people be displayed on one screen and data on a second screen. The WebEx features will be available in TMS Scheduler 6.2, and is due out later this quarter.

'Father of the database' dies at 79

■ Edgar Codd, who is credited with the theoretical development of relational databases, died April 18 at his home in Florida. He was 79. Codd, a mathematician, devised an approach for storing data in tables that were cross-referenced and could be presented to the user in a variety of ways. IBM, for whom Codd worked in the 1960s and '70s, ignored his work as it was working on a database with a different structure. Finally in 1978, IBM built a product that used Codd's theories. However, by that time a small company called Oracle had beaten Big Blue to the punch with its own database that utilized Codd's published works.

Microsoft pushes back release of Office 2003

■ Responding to feedback from beta testers, Microsoft plans to release a "refresh" of Office 2003 beta 2 before finalizing the product, pushing back the commercial launch of the productivity software suite until the third quarter, the company said last week. "We are making a number of improvements to the beta 2 version of the Office System products," a Microsoft spokesman said. "There are no major issues with Office 2003, but the beta has allowed the Office development team to gather feedback about some minor issues that can impact customer satisfaction." Microsoft declined to detail what improvements are being made or what issues the beta testers found. The refreshed version is scheduled to be released later this quarter, most likely on Microsoft's Office beta Web site, the spokesman said. Microsoft had intended to release the product in June.

SEC questions Riverstone accounting

■ The Securities and Exchange Commission has asked network equipment provider Riverstone Networks to voluntarily hand over information related to its accounting practices, the company said last week. The company said it intends to fully cooperate. No one from the company was immediately available to comment further.

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Alcatel builds
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Mgmt. vendors to focus on automation

■ BY DENISE DUBIE

LAS VEGAS — A slew of management product vendors this week will use NetWorld+Interop to tout out-of-the-box automation, integration and visibility features.

Companies planning to make announcements — some software, some hardware — include Aprisma, BMC Software and Smarts. Computer Associates also is promising news related to its on-demand computing strategy and Unicenter management system, but details could not be learned by press time.

Elisabeth Rainge. who tracks management technologies as a program director for IDC, says vendors seem less concerned these days with flooding the market with point products. Instead, they are adding or expanding automation and other features that "address staffing cuts and the loss of knowledge from IT departments." Although she notes that such features "would have been useful years ago as well."

What follows is a sampling of announcements planned for the show.

Smarts gets its products on same page

Smarts says it is creating common code across its management consoles and applications to enable easier roll-outs and better data sharing. Until now, customers had to write code to enable integration among Smarts' products, including its InCharge Service Assurance Manager (SAM), an application performance management program now on Version 6.0.

"There have always been a lot of management tools, all doing their own thing, but now vendors are working to make some sense of them and the data they collect," says Glenn O'Donnell, a program director at Meta Group.

"Smarts is working toward that kind of consolidation," he adds.

In SAM 6.0, Smarts also is introducing a feature that lets network managers build operational workflow and problem escalation rules into the software. The software then takes actions based on the rules.

The company says the feature helps tie operational processes directly to IT elements and eliminate redundant, manual tasks.

The upgraded software, which starts at $55,000, is scheduled to ship at the end of June.

BMC takes guesswork out of Web servers

In an effort to get speedier results to its users, BMC is including a root-cause analysis module in Patrol Internet Server Manager 6.1. The software, which is for managing Web, mail, FTP and other servers, now can perform the basic troubleshooting tasks of a network administrator.

"We built in our experience with 75% to 90% of the most typical problems with Internet servers and how to go about troubleshooting them," says Robert Anderson, a

product manager at BMC. "Instead of just saying a server has failed, the software can now tell the admin the cause and even fix it if [Patrol has] been configured to do so."

Version 6.1 can run either on the managed server or be used to keep an eye on Internet servers remotely from a dedicated workgroup server. The software uses native protocols to collect data and take automated actions on the servers, and it delivers data back to the Patrol Management Console or consoles from competitors such as HP and IBM Tivoli. (For other BMC news, see page 30.)

Version 6.1 costs about $2,000 per workgroup server and about $500 per remote host.

Fluke reaches into the WAN

Traditionally a maker of LAN troubleshooting devices, Fluke Networks this week will make a foray into WAN management and analysis.

Fluke Networks' OptiView WAN Analyzer monitors traffic on OC-3/OC-12 lines and reports on bandwidth utilization, virtual circuits and application chattiness over enterprise WANs.

The company's new OC-3/OC-12 OptiView WAN Analyzer is an appliance for monitoring WAN endpoints, virtual circuits and the traffic that traverses ATM and packet-over-SONET networks. The appliance plugs into the network and into the outgoing and incoming router ports. Upon installation, the appliance performs an automated discovery of the devices tapping into a particular WAN circuit. Software embedded in the appliance also reads packets and populates an on-board database with information about the devices and applications using the WAN circuit.

Fluke says having the appliance in place will enable automatic problem detection, identify the "top talkers" on the WAN and filter packets to only report those with errors to network engineers. The product can be used with or without other Fluke products, such as its LAN analyzers and network management console.

OptiView WAN Analyzer for OC-3 pricing starts at about $18,000 and for OC-3/OC-12 version, $28,000. OptiView WAN Analyzers for T-1, E-1 and T-3 links are planned for year-end.

Panacya adding apps intelligence

Panacya is updating its flagship BusinessAware application management software with what the company says is 80% to 85% of what all customers need to know about BEA Systems' WebLogic application server. Panacya also has included management information for Sun Solaris servers, Oracle databases and Cisco devices in BusinessAware 2.2.

The company says that by writing this knowledge into the software, BusinessAware now can be installed within weeks instead of months and can alert companies to potential problems more quickly. The software also now includes prepackaged modules for the automated analysis and monitoring of enterprise applications.

The central component of Version 2.2 runs on a Solaris or Windows NT/2000 server, and from there, lightweight agents are pushed out to the devices to be managed. The agents each contain Web server software to let network

managers access real-time performance data, such as response time and availability, via a Web browser. The performance data collected on each agent is stored in a central repository for long-term trending and historical reports. Panacya lets users create and customize software modules to watch over known performance problems or specific applications.

An agentless option also is available. BusinessAware 2.2 costs about $50,000.

MPLS nets are in Aprisma's sights

Aprisma is readying a version of its flagship Spectrum network management software specifically designed to give customers more insight into their Multi-protocol Label Switching (MPLS) networks.

Spectrum MPLS Manager would seem to be applicable mainly to carriers, which have started to roll out MPLS-based VPNs and other services, although Aprisma says some large companies have MPLS in their networks, too. (However, the product is being tested initially in two carrier networks.)

Aprisma says the software will help companies understand how logical and physical networks interrelate and how an outage ultimately will affect MPLS services.

"Physical layer failure may not affect the data path, but there are about six steps that need to be taken to figure that out. We're trying to eliminate a lot of that effort," says Jim Lochran, a solution architect at Aprisma.

Once installed, Spectrum MPLS Manager will do an initial discovery of the physical and logical topology of a network. It then will use SNMP traps exported from Cisco and Juniper devices to update any changes to the stored topology. Then it will determine the effect of alarms in the Layer 3 connectivity of customer networks.
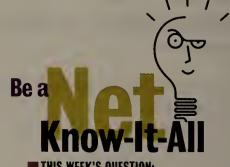
Spectrum MPLS Manager is scheduled to be available in June. Pricing will range from $10,000 to $25,000.

Lumeta reworks service into an appliance

Lumeta, an N+I newcomer, is taking its network inventory and security scanning service and putting the technology into a package of server and sensor appliances.

The server appliance, called IPsonar, resides in a company's network operations center, and sensors can be located inside and outside of corporate firewalls. The appliances automatically discover servers and other devices on the network.

IPsonar costs about $21,500. ■

Corrections

The story "Rackspace angles for bigger fish" (April 21, page 29) should have reported the 2002 revenue for Rackspace as growing 43% to $40 million.

■ An error in the column "Until the 'Net is fast enough?" (April 28, page 32) was caught after the page was printed. The company's name is Protocol Technologies.

• Cisco and SpectraLink will present Wi-Fi IP phones for bringing mobility to IP telephony.

• Fortinet will debut Gigabit-speed intrusion-detection gear that promises new approaches to intrusion detection and prevention.

• SSL VPN hardware from Neoteris is aimed at securing remote-user applications, while making VPN management easier than IP Security-based equipment.
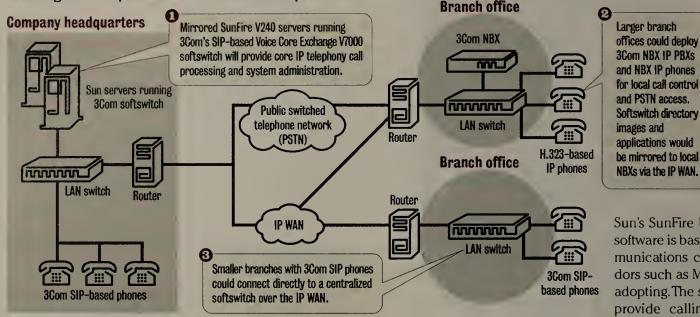
3Com is launching its VCX V7000 platform for supporting IP telephony in large organizations. The softswitch is a modified version of the carrier softswitch made by 3Com's former CommWorks division, which 3Com sold to the Chinese vendor UTStarcom.

3Com says the VCX V7000 will let corporations bring carrier-class scale and reliability to IP telephony networks. It will compete with offerings from Avaya, Cisco and Nortel. The CommWorks softswitch already is deployed as part of a hosted VoIP service from MCI, for-

3Com's enterprise VoIP blueprint

Combining NBX and CommWorks Softswitch products, 3Com is stitching together a VoIP offering for companies with thousands of phones.

Company headquarters

❶ Mirrored SunFire V240 servers running 3Com's SIP-based Voice Core Exchange V7000 softswitch will provide core IP telephony call processing and system administration.

Sun servers running 3Com softswitch

LAN switch Router

Public switched telephone network (PSTN)

Router

IP WAN

❸ Smaller branches with 3Com SIP phones could connect directly to a centralized softswitch over the IP WAN.

3Com SIP-based phones

Branch office

3Com NBX

LAN switch

❷ Larger branch offices could deploy 3Com NBX IP PBXs and NBX IP phones for local call control and PSTN access. Softswitch directory images and applications would be mirrored to local NBXs via the IP WAN.

H.323-based IP phones

Branch office

Router

LAN switch

3Com SIP-based phones

merly WorldCom, and at AT&T for offloading TDM backbone traffic to the carrier's IP network. .

A combination of 3Com NBX and CommWorks softswitch gear is being rolled out at Prudential North West Properties, a real estate firm in Oregon and Washington.

"The [3Com softswitch] appealed to us because … it's obvious that it can scale," says Sean McRae, vice president

and CIO at the real estate firm.

The softswitch will be used as a central call-control engine for 20 offices connected by a WAN. The branches will have a mix of NBXs and phones, and Session Initiation Protocol phones that the softswitch controls centrally.

3Com's softswitch is a call-control and applications platform that runs on Sun's SunFire Unix server platform. The software is based on SIP, a real-time communications control protocol that vendors such as Microsoft and Siemens are adopting. The softswitch can be used to provide calling features and unified messaging applications for tens of thousands of users — far beyond what its NBX IP PBX phone system can handle, the company says.

"We're also very interested in SIP and the open architecture" of the softswitch, McRae says. "Down the road, SIP will allow us to integrate different kinds of phones and other devices from a number of vendors."

3Com says it will work to integrate its NBX and VCX V7000 platforms as a single VoIP system over the next year.

Voice and wireless

N+I is ground zero for industry buzzwords, and two of the most popular — VoIP and Wi-Fi — will be brought together by SpectraLink and Cisco, which are separately announcing 802.11b-based IP telephones.

SpectraLink is adding the i640 and e340 to its lineup of Wi-Fi IP phones. The i640 includes a walkie-talkie feature based on IP multicast that will let users on the same 802.11b network talk by pushing a button on the handset. The e340 Wi-Fi IP phone is aimed at corporate users, and is a slimmer version of SpectraLink's previous Wi-Fi phones (targeted at healthcare and manufacturing markets). Both work with IP PBXs from Avaya, Cisco and Nortel and all standards-based 802.11b endpoints. A SpectraLink gateway server also is needed to connect the phones to an IP PBX.

Revealed at Cisco's Partner Summit earlier this month, the Cisco 7920 Wi-Fi IP phone lets companies deploy wireless phones throughout a Cisco-based VoIP and 802.11b infrastructure. The device will support all Cisco Call-Manager IP PBX features without additional equipment. The 7920 phone will include support for Cisco's Lightweight Extensible Authentication Protocol for security, and quality-of-service support over Cisco wireless gear. The phone costs $595 and will ship in June.

Cisco also is announcing new low-cost wired IP phones, with its 7902G, and the 7912G, which are available for $130, and $165 respectively. The 7912G includes a two-port LAN switch for connecting a PC and phone to the LAN over one cable. The 7902G does not include a switch, or an LCD display. Additionally, Cisco will release Version 3.0 of its Survivable Remote Site Telephony for Cisco IOS, which provides call control and calling features to VoIP users at remote sites, in case the office is cut off from a CallManager at a central site. New features include conference call transferring, music-on-hold support for Cisco's 7935 IP conferencing station.

Also in the wired world of VoIP, start-up Nuasis is debuting with its NuContact Center, an IP-based automatic call distributor, which controls phone call routing in a call

Foundry thinks big with Gigabit 'Mucho Grande' switch

Foundry Networks this week will lob the latest round in the 10G Ethernet switch battle when it debuts its BigIron MG-8 and MG-40 chassis at NetWorld+Interop.

The latest BigIron chasses are billed as Foundry's core switch platform for the future, with a terabit-scale backplane and 40G bit/sec of bandwidth per slot. The bandwidth upgrade will let 10G Ethernet ports operate at full throughput, which was not possible on the vendor's previous platform.

Developed under the code name Mucho Grande, the BigIron MG8 is an eight-slot enterprise chassis targeted for large core backbone deployments and metropolitan-area networks deployments. New four-port 10G Ethernet blades also will be announced for the MG8, allowing for a total of 32 nonblocking 10G bit/sec Ethernet ports in a single chassis, according to Foundry.

Analysts say adoption of Gigabit Ethernet has been slow — 10G Ethernet accounted for 1% of the Ethernet market in the fourth quarter of 2002, Synergy Research says. But corporations with intense bandwidth demands should look to platforms such as the MG8 for future network deployments.

"Few companies need 10 Gigabit Ethernet," says Zeus Kerravala, an analyst with The Yankee Group. "But if you're investing in new switching gear now, there's no sense buying a platform that can't support 10G Ethernet, because it's coming down the road."

The box will compete with recently announced 10

Foundry's BigIron MG8 promises full 10G Ethernet throughput, with a 1.28 terabit/sec backplane.

Gigabit gear from Enterasys Networks, with its Matrix N-Series chassis, and Cisco's Supervisor 720 switch fabric module for the Catalyst 6500. The Cisco and Enterasys products promise 40G bit/sec of bandwidth between line cards and the backplane, allowing for full 10G bit/sec. Like Foundry, Cisco and Enterasys had offered 10G Ethernet line cards, but were limited to performance less than 10G bit/sec because of chassis/switch fabric limitations. Start-up Force10 Networks released a switch last fall that offers 40G bit/sec per slot.

The BigIron MG40, a service provider box, also has eight slots, 40G bit/sec of slot bandwidth and a terabit backplane like its enterprise cousin. The MG40 also includes carrier features, such as enhanced Border Gateway Protocol (BGP) routing and a Network Equipment Building Standards Level 3 chassis. The BigIron MG8 and MG40 switches support Layer 2 and Layer 3 switching and Routing Information Protocol Version 2, Open Shortest Path First and BGP routing protocols.

Kerravala says that while the BigIron MG products were a long time coming, the release is significant for Foundry.

"Companies like Force10 made all the other vendors sit up and take notice," he says. "Foundry isn't a solutions provider — they're a switch company. They're goal is to build the best switch, so it's important to have this kind of product."

— Phil Hochmuth

Jury is out on Windows 2003

Survey says most users undecided or staying away from Microsoft's latest OS.

■ BY JOHN FONTANA

SAN FRANCISCO — Despite last week's party to launch Windows Server 2003, the sobering reality is that customers are in no rush to roll out the operating system that is the gateway to a new generation of Microsoft software.

Windows Server 2003 does provide security and performance gains, 64-bit support and the foundation for real-time communication, a collaboration infrastructure and a management platform. (See our review of Windows Server 2003 at www.nwfusion.com, DocFinder: 5662.) But a down economy and lingering Windows 2000 upgrades are causing users to think hard about migrations.

In a recent survey by The Yankee Group, about half of 1,000 respondents said they have not determined if they will adopt the server, and 15% said they would not. Only 12% of the current Windows installed base plans to adopt the new operating system in the next year, compared with 30% that adopted Win 2000 in its first 12 months.

"I like what I see in Windows 2003," says Tim Matthews, associate director of technology for the University of Texas

In with the new?

Here is a look at a few of the challenges Microsoft faces in driving adoption of Windows Server 2003, which does not have any marquee feature enhancements.

- Convince cash-strapped IT departments that have deployed Windows 2000 and Active Directory that performance and security improvements warrant another upgrade.

- Prove through customer examples the stability and benefits of the new 64-bit version of the operating system, which, if adopted, will require IT investment in new hardware.

- Convince users of the competitive advantages in add-on technologies such as real-time communications and digital rights management that require Windows Server 2003.

- Emerge unscathed from the initial and inevitable hacker onslaught to uncover any major security flaws in the operating system, the first to be produced under Microsoft's Trustworthy Computing campaign designed to build secure code.

School of Business in Austin, who says he runs the operating system on his home network. "But we are very happy with Windows 2000, which we have worked into a nice and stable platform." Matthews, who is involved with the early-adopters Joint Development Program for Exchange Server 2003, says he didn't want to bite off more than he could chew.

Critics say Matthews need not worry, as there is not a lot to chew on in Windows Server 2003. But what is there is the foundation for the next generation of Microsoft software.

During his keynote address opening the launch event last week in San Francisco, Microsoft CEO Steve Ballmer defended the server by calling it "a very significant piece of work; it is not just a small incremental release. It is a breakthrough in security and reliability, a breakthrough in management, a breakthrough for software developers and those who want to collaborate."

This is the first operating system developed under Microsoft's Trustworthy Computing initiative, which in theory should reduce the number of patches for it down the road. The operating system also has many features turned off by default, which should help users avoid inadvertently opening themselves to attacks.

Microsoft also has focused on performance and server consolidation as the hallmarks of the new operating system. And with the addition of 64-bit support, Microsoft contends that Windows Server 2003 is better equipped to run critical applications and databases, including the 64-bit SQL Server that also was released last week.

Also, improvements in Active Directory should solve lingering operational headaches, and the addition of Active Directory Application Mode will provide deployment options.

Microsoft for the first time is including natively in the base operating system its .Net Framework, which supports the execution of Web services applications.

"If you are on NT 4.0 you will see the largest differential [in features and performance]," says Michael Cherry, an analyst with Directions on Microsoft, a research firm. "If you are on Windows 2000 it depends on if you deployed Active Directory. Those with [Active Directory] deployed will see the least differential. The thing that Microsoft customers will struggle with is that there is no single big feature."

That is certainly one of the factors weighing on IT decision-makers.

"We are still determining if we will go to Windows 2000 or 2003," says Carol Fee, network administrator for voice application vendor Artisoft in Cambridge, Mass. Fee runs an NT network that includes an abundance of Win 2000 servers. "Windows 2003 has some nifty improvements, but it is only gold code and hasn't been tested," she says.

Like most upgrades, users will have to evaluate the migration in relationship to long-term plans, says Chris Burry, technology infrastructure practice director and technology fellow for Avanade, a systems integrator. "You have to look at what you are trying to accomplish with your infrastructure," he says. "How are you building that infrastructure for the applications that you want to use in the future?"

The evaluation process is pushing some to Windows 2003.

"What's hooking us are the things that weren't perfect in Windows 2000 that have been fixed in Windows 2003," says Rob Sullivan, vice president of technical operations for Universal Network Exchange in New York, which provides electronic trading solutions for institutional investors. Sullivan cited load balancing, the .Net Framework and clustering, which in particular will let his company use a single cluster to set up a disaster-recovery center at a remote location.

"We are really focused on those features and will get them into production in the next six to eight months," he says. ■

Numbers game

It took more than three years and 5,000 developers to come up with the nearly 50 million lines of code and 650 technology advances and enhancements that make up Windows Server 2003, which itself is already on its third name.

Plumtree bears new portal fruit

■ BY ANN BEDNARZ

SAN FRANCISCO — Plumtree Software this week will announce a software suite that bundles upgraded versions of its portal, search, collaboration and content-management offerings with a new module designed to let customers build composite portal applications from Web services.

Plumtree's Enterprise Web Suite is the vendor's first attempt to package its software products as an integrated application platform suite — a trend analysts say is catching on with users.

"By 2004, most enterprises won't buy a portal product; instead, they will buy a set of functionality that includes the portal, and which will likely be bundled into a suite," Gartner predicts.

The suite includes one new product, Enterprise Web Development Kit (EDK), which consists of a tool set for assembling portal applications from Web services components running on different platforms.

With EDK, Plumtree aims to mask the complexity of making Web services built in Java and Microsoft's .Net work together, says Glenn Kelman, vice president of marketing and product management at Plumtree. The two development platforms employ different encoding schemes and different ways to serialize data. EDK offers tools to resolve those differences behind the scenes, he says.

Plumtree doesn't purport to replace the development platform customers use to build Web services — whether it's BEA Systems' WebLogic platform, IBM's WebSphere platform or any other system — but it wants to be the environment for assembling those Web services into applications, Kelman says. "We've got these terrifyingly huge competitors. Ultimately, the one thing we can do that they can't is stitch it all together," he says.

EDK's development tools include profile services, to import user data from back-end systems; authentication services that synchronize with existing user directories so developers can add customer, partner, supplier and employee users to a portal; and crawler services that seek out and index new content from external repositories.

To promote component reuse, the Enterprise Web Suite contains a revamped knowledge directory that organizes all the resources used to build applications.

Plumtree also devised a new template to speed application building. With the templates, users can pull in services from Plumtree's content management and collaboration modules, and build customized user interfaces or reuse existing models.

New security provisioning tools let companies designate separate sets of controls for each application; one user might have administrator privileges in one application, but not another, for example. In earlier versions, one user's role was fixed across applications, Kelman says.
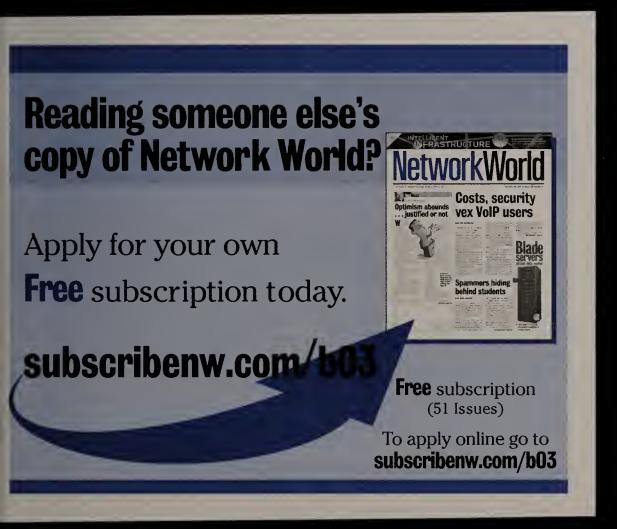
Also new to the Enterprise Web Suite is a universal user profile system that lets organizations import user data from back-end systems — such as Lightweight Development Access Protocol repositories, human resources systems or customer databases — and combine it with portal services to create more personalized applications.

Enterprise Web Suite includes upgraded versions of Plumtree's major products: Plumtree Corporate Portal 5.0, Plumtree Search, Plumtree Collaboration Server 3.0 and Plumtree Content Server 5.0.

Plumtree says the new editions will be available by midyear, and a new version of Plumtree Studio Server, for building database-driven forms and services, will be available in the summer. ■
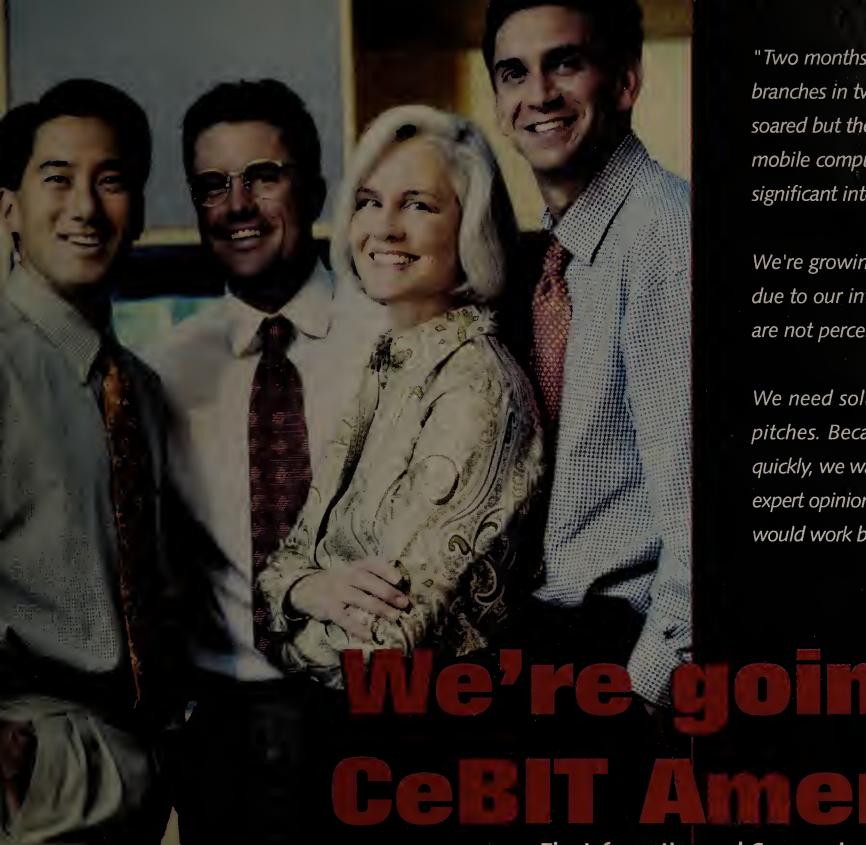
"Two months ago our company added branches in two major markets. Sales soared but the wide range of new mobile computing platforms created significant integration challenges.

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Customer unrest a year later

HP/Compaq merger befuddles corporate customers.

BY DENI CONNOR

HP might have calmed Wall Street's fears about the Compaq acquisition, but one year after the deal was finalized it appears the company has yet to convince the group that matters most: customers.

Whether the topic is service, storage, product road maps or business practices, HP customers generally report experiencing a mix of satisfaction, unhappiness and confusion more than any benefits the company might have touted during its long and contentious battle to gain stockholder approval for the merger. Next week HP executives plan to brief reporters on their "enterprise strategy," and it's a fair bet they also will face questions about the assimilation of Compaq.

"On paper, the merger looks to have gone very well," says John Eisenschmidt, director of packaged application implementation and support for Feld Entertainment in Vienna, Va. "As an HP customer, however, I'd have to say it's gone poorly."

Feld Entertainment is the producer of Ringling Bros. and Barnum & Bailey Circus and Disney on Ice. Eisenschmidt has HP Alphaservers, Compaq ProLiant servers and a storage-area network (SAN) built with HP products.

"I've seen a dramatic drop in the quality of service, so much so that we stopped buying [what used to be called] Carepaq support contracts and started keeping spare servers on the shelf," Eisenschmidt says. "The failure rate went up, the response time went down, and the expertise I used to know with Alpha and PC technicians on the Compaq side is gone," he says.

His concern is shared by Terry Roedecker, senior network manager for a large financial institution in the Midwest, who says he has experienced similar issues with his ProLiant servers.

"HP has made some cultural changes at Compaq that we don't like," Roedecker says. "One of our biggest servers lost a power supply two weeks after going out of warranty. When we called HP for a courtesy extension, they said they couldn't do courtesy extensions any longer. Compaq had done it

HP/Compaq over the years

June 1997: Compaq acquires Tandem for $3 billion.

September 2001: HP announces plan to acquire Compaq for $25 billion.

November 2001: HP board approves acquisition.

January 1998: Compaq acquires Digital for $9.6 billion.

October 2001: Executives named for merged company.

November 2001 to May 2002: Stockholder proxy battle ensues.

1997 1998 1999 2000 2001 2002 2003

May 2002: Shareholders approve deal. HP officially launches new company, unveils road map.

November 2002: Former Compaq CEO Michael Capellas resigns as president of HP.

February 2003: HP reports $17.9 billion revenue for first quarter, below forecasts.

several times for us in the past."

Roedecker says his organization also recently lost a motherboard on a server that was in warranty and had next-day replacement guarantees with a technician onsite.

"The parts were here the next day, but the technician wasn't able to show up for three days," Roedecker says. "With Dell, they were onsite in four hours to replace a $30 part." Since switching its business to Dell, Roedecker has acquired 50 servers.

HP defends its support policies, saying it has not changed since the merger.

"Warranties for HP ProLiant servers have continued on as they were before the merger," a company spokesman says.

More online!

Get all the details on the HP/Compaq merger anniversary.

Some merger goals remain unattained.

•Services expanded, but still lag behind IBM.
•Compaq servers under siege by IBM, Dell.
• Jury remains out on Itanium strategy.
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Other HP customers say they are more pleased with their post-merger service.

"From a call center or help desk perspective, [HP is] outstanding," says Dave Hogan, senior vice president and CIO with the National Retail Foundation in Washington, D.C. "From a support issue, we had a minor hardware problem, and they were all over it. I always get a good solid technical person on the other end of the line, as opposed to some call centers with sales and marketing people."

Wade Phillips, technology manager for the Shakopee Public Schools in Minnesota, says that any service problems HP has are the result of the company being larger.

"HP has become a bigger company, and that has affected some of the personal touch that Compaq had," Phillips says. "The presales and postsales guys hold together the customer contact and at least keep us happy."

Phillips has noticed another change.

"Credit lines have become a lot harder — they used to be more lenient with the pay cycles of our school district," Phillips says. "They have adopted better business practices and have changed to become tougher that way."

"The integration of storage products is going great with respect to the merger," he adds. "HP was very smart to keep the Compaq StorageWorks products. We use StorageWorks almost exclusively."

Some HP customers remain bewildered by the company's plans to move so many system platforms to the Itanium processor. HP and Compaq had decided to abandon their own server chip architectures in favor of Intel's Itanium processor. Now that the companies are united, they must work to migrate a massive installed base of PA-RISC and Alpha server users to the new platform from Intel. Believing that many customers will want to adopt a new processor and migrate existing machines to it is myopic, according to some customers and analysts, especially in this down economy.

"When you come up from the Xeon space, Itanium looks attractive, says Hal Kuff, a vice president of technology and an HP user at wireless technology distributor Tessco Technologies in Hunt Valley, Md. "But when you come down from Alpha, you have serious concerns about the power for the dollars."

Long-time HP customer Douglas Becker, IT specialist for the Pierce County government in Tacoma, Wash., also questions HP's plans to migrate users to other platforms.

"[The processor] is just another of their forays into new technology that may or may not last more than two years," Becker says. "As for product overlap on the HP3000, it's about as likely as a snowball's chance in a blast furnace that Pierce County would move from an HP3000 to an [Itanium] running HP-UX."

He might consider Dell or IBM servers, but for now Pierce County has one HP3000 server running the mpe/iX operating system, 24 ProLiant Windows-based servers and a few HP-branded servers.

Jamie Gruener, senior analyst for The Yankee Group, says HP has its work cut out on this issue.

"HP is set on Itanium for at least the next 12 months, but what has to be proven and what a lot of people are waiting for is the value proposition that supports customers moving their platforms to Itanium," Gruener says. "The supporters of Itanium have to show that performance is better than existing systems and that the migration to these new platforms is going to be easy." ■

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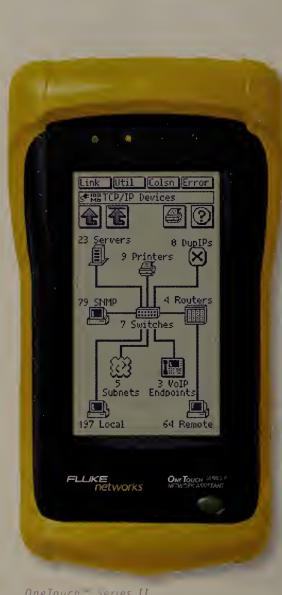
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The Cisco AVVID Partner Program is designed to provide customers with tested, interoperable solutions, enabling these leading product and services firms to deploy innovative business solutions.

On the next few pages, you will find the stories of eight companies that speak to the success and simplicity of an architectural approach to technology solutions and the many benefits gained by collaborating with Cisco and Cisco AVVID Partners.

CONTENT NETWORKING

NEOnet

SECURE COMPUTING

Earns Extra Credit

Cisco and Secure Computing deliver safe Web browsing and speedy content delivery.

EDUCATIONAL INSTITUTIONS know they have to keep kids safe from inappropriate Web sites and chat groups, but it's a real challenge given that their IT staffs are typically stretched to the limit.

The Northeast Ohio Network for Educational Technology (NEOnet) found a doubly appealing solution to the problem in an integrated offering from Cisco Systems and Secure Computing Corp., a member of the Cisco AVVID (Architecture for Voice, Video and Integrated Data) Partner Program.

Cuyahoga Falls, Ohio-based NEOnet provides computer services, including content filtering, to 20 school districts. In addition to the kids' well-being, funding is at stake where filtering is concerned because schools must meet strict requirements to win federal government dollars.

NEOnet has been using SmartFilter® from San Jose, California-based Secure Computing for three years. When it was time to upgrade the caching appliance on which SmartFilter was running, NEOnet searched for a solution that could also support streaming video over its Cisco network. NEOnet learned that SmartFilter Version 3.0.2 had passed the Cisco AVVID Partner Program testing criteria for interoperability with the Cisco Application and Content Networking System (ACNS) Software Version 4.1, and that Cisco offers SmartFilter pre-installed on the Cisco Content Engine. Clearly, the fit was right.

NEOnet Director Matthew Gdovin says the implementation was easy, in large part because engineers from both Secure Computing and Cisco helped NEOnet work through questions and issues. That came as no surprise to Gdovin, who says Secure Computing's support organization is one of its most attractive attributes.

NEOnet put the combined solution in place in time for the 2002–2003 school year, and it's worked flawlessly from the outset. "When you've got two vendors you trust, and they offer something like this jointly, it's just hard to pass it up," Gdovin says.

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Flexible content management solution enables franchise to meet
varying Internet access requirements.

WHAT WOULD YOU DO if you had to welcome bitter competitors to your headquarters eight times a year or more, along with a phalanx of media, and make sure they enjoyed the comforts of home?

Most likely, you'd pay close attention to network access and security. When the New York Giants faced this challenge, the team found that Cisco Systems networking equipment and a St. Bernard Software iPrism® filtering appliance provided the right combination of security and access.

The Giants host eight regular-season games each year at Giants Stadium in East Rutherford, New Jersey, and must provide Internet access for visitors and reporters. Moreover, a significant portion of the organization is on the road for a month and a half for training camp and at least eight weekends per year, so remote access to critical data is a must.

Last year, the Giants' IT organization, led by Director of Computer Services Jon Berger, decided the team's network was due for an upgrade. "Because our network had grown piece by piece, as in so many companies, there wasn't a lot of homogeneous design," says Justin Warren, a technical support specialist. The Giants decided to upgrade to a switched network and quickly settled on Cisco as its provider.

A state-of-the-art VPN was a key component of last year's Giants Stadium network upgrade.

The team wanted a more reliable, robust virtual private network that it could use on the road. Parts of the network had to be segmented, and high-quality streaming video to the desktop was a must. The Giants and Cisco settled on a design anchored by a Cisco Catalyst® 6500 Series Switch and two redundant Cisco PIX® firewalls.

One crucial component in this massive upgrade was Internet access management. The Giants have several categories of users: stadium-based employees, remote employees, visiting team personnel and media. The organization had decided to block certain categories of URLs, but beyond that, it needed a flexible system because each group of users requires access to different types of sites.

The Giants selected iPrism, the Internet access management solution from San Diego, California-based St.

Bernard Software. "For starters, it's incredibly easy to set up," Warren says. "We had it out of the box and running in 10 minutes."

St. Bernard's iPrism is a self-contained hardware appliance with 60 preset and eight customizable content categories. "We simply checked off the categories we wanted blocked," Warren says.

The team could easily turn off reporting to reassure its users that nobody was checking up on their Web browsing, an advantage of iPrism.

In addition, St. Bernard is a member of the Cisco AVVID (Architecture for Voice, Video and Integrated Data) Partner Program, and iPrism Version 3.3 has been tested and passed strict criteria set by Cisco for interoperability with the Cisco PIX 500 Series Firewall at the core of the Giants' network. Cisco AVVID is a standards-based network architecture that makes it easy to add new components as needed.

Not every enterprise is as glamorous as an NFL franchise, but today, nearly every enterprise has the same need for a versatile, secure network and fail-safe Internet access control.

IP VIDEOCONFERENCING

TANDBERG

Using IP to Shrink Distances

Australian agency cuts costs and improves communications with IP videoconferencing.

AUSTRALIA IS A VAST NATION with a widely scattered populace. This creates challenges for government IT organizations seeking to improve services while staying within budget.

In the state of Victoria, the Department of Natural Resources and Environment (DNRE) has more than 100 offices. In a bid to reduce travel costs and increase employee safety while improving communications, the department recently investigated videoconferencing.

"Videoconferencing provided the opportunity to collaborate effectively and significantly reduce our travel," says Andrew Paynter, project manager at the Victoria DNRE. "But ISDN videoconferencing was cost-prohibitive for us."

The department elected to run videoconferencing over its recently created IP network, based on Cisco AVVID (Architecture for Voice, Video and Integrated Data). At its core, the network uses Cisco Catalyst 6509 switches at three sites in a redundant array on a metropolitan dark fiber network. Routing is handled by load-balancing Cisco 7206 routers. At headquarters, a Cisco IP/VC 3540 Multipoint Control Unit (MCU) handles voice and video bridging.

The department selected TANDBERG's videoconferencing and collaborative communications solution. Headquartered in Oslo, Norway, and New York, TANDBERG is a global supplier of collaborative communications solutions. The company's Architecture for the Collaborative-Communications Enterprise (ACE) embraces open standards and lets enterprises take advantage of existing network infrastructure—exactly what the DNRE needed.
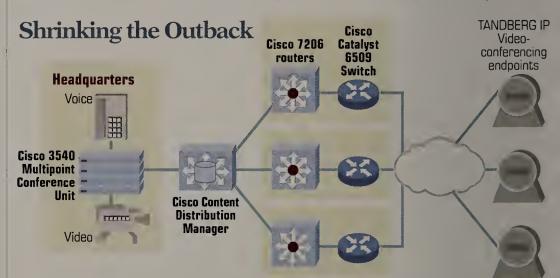
What sealed the deal was the fact that TANDBERG is a member of the Cisco AVVID Partner Program, and the TANDBERG 1000, 2500 and 6000

Videoconferencing Systems Release B6.1/E1.1 have been tested by a third party and have met the Cisco AVVID Partner Program criteria for interoperability with the Cisco IP/VC 3540 MCU

Shrinking the Outback

Victoria's Department of Natural Resources and Environment is saving some $8 million in travel, training and telecom costs with an IP video network built on top of a Cisco AVVID infrastructure that enabled it to seamlessly integrate TANDBERG IP videoconferencing equipment at more than 100 sites.

Version 1.0. "We're interoperable. With Cisco's market leadership and impeccable service, that's really persuasive for IT," says Andrew Miller, TANDBERG's CEO and vice-chairman.

The system supports both point-to-point and multipoint IP videoconferencing. Sessions can be recorded, digitized and distributed to remote sites

for on-demand viewing through the Cisco Content Delivery Networks solution, which provides integrated caching and content delivery services in a single system.

According to Paynter, Cisco provides a fully converged network that's scalable, redundant and cost-effective. Meanwhile, TANDBERG offers easy-to-use, standards-based videoconferencing at broadcast-television quality—and it fully integrates with the Cisco network right out of the box.

In 2002, the Cisco and TANDBERG solution reduced travel costs by $3 million, telecom costs by more than $4 million and training costs by $1.5 million—and that last number is expected to rise dramatically this year as usage grows. The agency has also found that by introducing intelligence into its network and using the capabilities offered by content-sensitive switching, routing and content delivery, it has improved the performance of its mission-critical applications and WAN. It all adds up to a very rapid return on investment and fewer plane rides.

N2H2
INTERNET CONTENT FILTERING

Building Internet Safety

Century-old construction firm uses firewall combined with filtering software to keep content appropriate for business.

HAVING BEEN IN THE CONSTRUCTION BUSINESS for more than 100 years, Lockerbie & Hole certainly knows how to build things—including leading-edge networks. But in the middle of the year 2000, when the Edmonton, Alberta-based company wanted to upgrade from a frame relay network to an IP network to position itself for business in the new century, it faced a couple of distinctly 21st century challenges.

Sheldon Guenther used tools from Cisco and N2H2 to construct a filtering solution that keeps Lockerbie & Hole's Web surfers focused on business.

IAN GRANT

One challenge was providing security for its new network, which would use the public Internet to save on phone costs. The other was filtering the Web sites its employees accessed. Corporate management wanted to boost productivity by limiting the number and types of Web sites employees could browse, so installing an Internet filter became an important part of the network upgrade.

Lockerbie's frame relay network was based on equipment from Cisco Systems. So when a representative from Telus Communications, Lockerbie's local phone company, suggested the company base its new network on Cisco AVVID (Architecture for Voice, Video and Integrated Data), Lockerbie readily agreed. The new IP network uses seven Cisco 3600 Series routers and several Cisco Catalyst switches: six 3548 XLs, two 2924 XLs and one 2912 XL. Telus, a Cisco Gold partner, also recommended a Cisco PIX 515 Firewall to secure the network from intruders.

The next step was to choose the Internet filtering solution. Lockerbie's reseller,

MicroAge, recommended the company try Sentian™, enterprise-level Internet filtering software from N2H2, Inc., of Seattle, Washington. Because Sentian Version 1.0 had met the interoperability testing criteria set by the Cisco AVVID Partner Program with the Cisco PIX 515 Firewall, it seemed a good choice.

"After downloading the trial, it was installed and running in about 10 minutes. We could see immediately it was exactly what we needed," says Sheldon Guenther, network analyst for Lockerbie & Hole. Company managers are most interested in statistics such as top Internet sites viewed and percentage of sites blocked. Administrators can also search by user name, IP address and time of day. "We can give our managers just what they need to confront people over inappropriate Internet usage," Guenther says.

Applying filtering to the network is likewise a snap using the wizard provided in the Cisco PIX Device Manager. The N2H2 Administration module allows the systems administrator to

simply select a group or individual user from those defined in the Windows Active Directory Controller, then assign categories of Web sites that should be filtered for that user or group. N2H2 maintains lists of sites that belong in each category, based on its own research and feedback from its users, and Lockerbie downloads updates daily.

All Web traffic going through the PIX Firewall gets forwarded through Sentian, but neither remote nor in-house users have seen a reduction in access speed, Guenther says.

The implementation was extremely smooth. N2H2 worked closely with the in-house project team to ensure the filtering installation would be transparent to Lockerbie users, while Telus headed up the Cisco PIX Firewall and network installation.

Lockerbie & Hole now has a network that matches its venerable reputation. "It's so much faster and cheaper than the old frame relay network," Guenther says. As for the Sentian filter, the payoff is increased productivity. Guenther can't prove employees aren't wasting time chatting around the water cooler, but he is sure they aren't browsing inappropriate Web sites.

IP TELEPHONY

net**IQ**
Work Smarter.

Proving the Quality of IP Telephony

NetIQ's Vivinet™ Management Suite helps Sprint assure its customers that IP telephony doesn't mean sacrificing voice quality.

NEAR THE END OF 2001, with organizations large and small interested in IP telephony to reduce network costs and complexity, Sprint Corp. sensed the time was right to offer an IP telephony managed network service (MNS).

But one of its concerns was assuring customers they could migrate to IP telephony without sacrificing the voice quality provided by the public switched telephone network (PSTN).

Sprint knew that one version of its new offering would be based on Cisco Systems IP Communications solutions. So, before rolling out its SprintIP Voice Services MNS offering, Sprint needed to find a network management platform that was not only integrated with Cisco IP Communications solutions such as IP telephony, but would also work with all the existing network infrastructure that Sprint—and its customers—had in place.

"We had to make sure the management platform would integrate easily with the current management software out there. This is critical when you have an IP telephony solution," says Barbara Schauperl, senior manager, Sprint Managed Network and Professional Services Product Management group in Kansas City, Missouri.
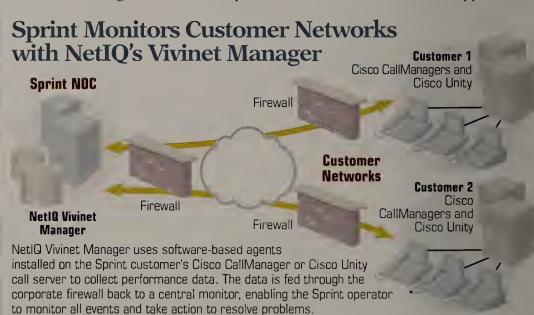
After casting a wide net for available network management technology, Sprint zeroed in on NetIQ Corp. of San Jose, California. NetIQ offers several voice and video management packages, including Vivinet Manager Suite, which handles day-to-day network monitoring and management, and Vivinet Assessor, which assesses the network's readiness for IP telephony prior to deployment.

NetIQ's Vivinet Manager 2.1 has been tested with Cisco CallManager 3.1(1)-MCS through 3.1(4b)-MCS and Cisco Unity™ 3.0(2) through 4.0, in accordance with interoperability criteria set by the Cisco AVVID (Architecture for Voice, Video and Integrated Data) Partner Program, making it easy to deploy with Cisco IP telephony products. That was significant to Schauperl.

Sprint Monitors Customer Networks with NetIQ's Vivinet Manager

NetIQ Vivinet Manager uses software-based agents installed on the Sprint customer's Cisco CallManager or Cisco Unity call server to collect performance data. The data is fed through the corporate firewall back to a central monitor, enabling the Sprint operator to monitor all events and take action to resolve problems.

"Cisco is very proactive—they introduce the service solution right along with the new box. We're in the business, so we can appreciate that," she says. "For me, it's all about the total solution we're providing the customer."

In the first quarter of 2002, Sprint decided to implement NetIQ Vivinet Manager and completed a beta test

soon thereafter. Sprint rolled out the product internally around mid-year and launched SprintIP IP Voice Services MNS in October of 2002—an impressive turnaround for a major new service offering. "Speed and time to market are always a priority," Schauperl says.

Representatives from Cisco and NetIQ joined Sprint staffers on the project team, which was headed by a project manager from Sprint. "We really felt like we were a team throughout the whole process. Cisco and NetIQ were very quick to respond," Schauperl says. "We have received continued support from NetIQ and Cisco, and have had virtually no problems with the implementation."

Schauperl is most pleased about Sprint being able to take advantage of the increasing interest in IP communications network services while providing the network management and monitoring services through Vivinet Manager that help customers operate their businesses. "We're meeting the customers' need for a total service solution," she says. "That's the most important thing to us."

Necessity Breeds Invention

Cisco partner's IP voice recording solution saves the day in Jacksonville, North Carolina.

IN THE YEAR 2000, the City of Jacksonville had no IT infrastructure to speak of—no citywide network, no e-mail system and an aging phone system. Calls in to the police station were recorded, as required by federal law, on an aging tape-driven system from Dictaphone Corp.

Midway through 2001, the Jacksonville City Council decided it was time to install a state-of-the-art network. It hired a new director of IT, Earl Bunting, who quickly began the task, ultimately signing a contract with Sprint Corp. to install an IP telephony network based on Cisco Systems IP Communications solutions.

The deployment went well until the project team discovered the phone-recording system wouldn't work with IP telephony. Bunting considered halting the deployment, but then

Dictaphone and its new partner, Spescom DataVoice Ltd., proposed a solution. Spescom's DataVoice Nexus Version 2.2 had been tested in accordance with interoperability criteria set by Cisco in the Cisco AVVID (Architecture for Voice, Video and Integrated Data) Partner Program for use with Cisco CallManager Version 3.1(3)-MCS, making it easy to deploy.

Representatives from Spescom DataVoice traveled from their South African headquarters to join colleagues from Sprint, Cisco and Dictaphone at

City Hall in Jacksonville to plan the installation. They arrived on a Thursday. "By Tuesday, we were up and running for the first test," Bunting says.

Today, the City of Jacksonville and Bunting are thrilled with the recording system and the Cisco IP Communications solution, with tools including e-mail and a first-class Cisco Unity unified messaging system. "The city employees are very happy with what they have. It has really increased productivity," he says. The $6,000 per month the city now saves on its phone bill doesn't hurt, either.

> **LEARN MORE** about the IT Telephony solution Cisco and Spescom DataVoice delivered for the City of Jacksonville, N.C.
>
> **Visit: www.nwfusion.com/go/jacksonville**

Remote Control

Cisco Systems and Zone Labs team up to help Donaldson ensure its remote PCs meet corporate security standards.

DONALDSON COMPANY, INC., a $1.1 billion manufacturer of filtration systems and replacement parts, needed a way to ensure that remote PCs met corporate security standards before they were allowed to access the network.

The company installed a Cisco VPN 3000 Series Concentrator to protect the remote transfer of data, but it needed a way to also ensure the physical integrity of the remote PCs.

Donaldson decided to install the Integrity enterprise security solution from Zone Labs to enforce up-to-date security policies for about 800 remote PCs. Zone Labs Integrity™ Version 1.5 meets the interoperability test criteria set by the Cisco AVVID (Architecture for Voice, Video and Integrated Data)

Partner Program and has been tested with the Cisco VPN 3000 Series Concentrator Software Version 3.5.1. When these products are used together, the Zone Labs Cooperative Enforcement™ technology ensures that remote PCs adhere to corporate network security standards, such as the presence of up-to-date virus definitions and the absence of file-sharing services. If the PCs are in compliance, Integrity allows them to connect to the network using the Cisco VPN. Integration between

Integrity and the VPN made for easier installation and maintenance.

With the involvement of Cisco and Zone Labs, the Integrity implementation was straightforward. It took about half a day for the project team to get the first client up and running with the system, and the remainder of the 800 mobile users' PCs were configured remotely, significantly speeding the installation. For Scott Olson, senior WAN technical analyst for Donaldson, the relationship between Cisco and Zone Labs was a major selling point.

"There was a lot of cooperation between the vendors. That really helped tie things together," says Olson. "Now we only allow known, good applications to communicate over the network."

> **LEARN MORE** about the Security and VPN solution Cisco and Zone Labs delivered for Donaldson Co.
>
> **Visit: www.nwfusion.com/go/donaldson**

Infrastructure

Gauging the network effect of grids

■ BY CAROLYN DUFFY MARSAN

As more companies pilot grid-based applications, the question for network executives is what effect grid computing will have on the design and performance of their infrastructures.

Initially, the answer appears to be none. That's because most companies are being driven to grid computing by a desire to increase utilization of their LANs and WANs. But long term, the trend toward distributed processing of compute-intensive and data-intensive applications might result in the need for more redundant network designs, smarter middleware and high-availability network services.

"Typically, you don't need to make significant modifications to your network infrastructure to make it work with grid computing," says Peter Jeffcock, group marketing manager for grid computing at Sun. "The primary change in adding a grid is in increased utilization and the number of systems connected."

But as network utilization rises, companies might need to upgrade bandwidth or storage, Jeffcock says.

"You may need to make some changes if your environment goes from running at 20% capacity to 80% capacity, because if you have a failure you'll start to lose significant functionality," he says. "You might need to rearchitect parts of the network around potential failure points."

Most companies testing grid applications today are trying to increase use of their existing networks, particularly 100M bit/sec or 1G bit/sec Ethernet LANs installed in the late 1990s. Many companies also have T-3 or higher WAN connections that were built for peak loads but experience significant excess capacity.

By distributing key applications across a LAN or WAN grid, network managers can increase the speed at which processing is done or the size of the data set that is processed without having to purchase additional hardware or software.

"Over the past 10 years, companies have spent an enormous amount of money buying networks and computers, and most of the time they are just space heaters," says Wade Hennessey, CTO and vice president of engineering at Kontiki, a video-transmission software company that recently introduced its first grid product. "Companies are not spending tons of money on hardware anymore. They're looking for something they can use with what they've already bought."

Most corporate grids run across intranets, while Internet-based grids are popular with the academic community. many companies are testing grids initially on LANs in a particular location and spreading them out across their WANs.

As companies gain more experience with grids, they are finding that they might

Short Takes

■ **Ingate Systems** and **Quick Eagle** have assembled a package for customers looking to connect a branch or telecommuter office to a VPN and protect it with a firewall. The deal pairs a 55M bit/sec Ingate Firewall 1200, which has VPN capabilities, with a Quick Eagle 4231 access router. The firewall supports Session Initiation Protocol, which makes it simpler to set up the firewall to allow SIP-based IP phone calls and videoconferencing. The router has one T-1 port for connecting to the WAN. The list price of the bundle is $1,900.

■ **Allot Communications** will unveil a new quality-of-service appliance at NetWorld+Interop it says will make it possible for corporate users to boost application performance over multiple WAN links. The **NetEnforcer AC-802** device doubles the throughput of the company's former top-shelf, QoS appliance, the AC-701, to 310M bit/sec, making it suitable for the largest companies. The gear sits between the WAN router and the LAN, and enforces QoS rules on traffic. It can monitor traffic at any network layer and report on top users, bandwidth utilized, bandwidth consumed per application and sites visited by Web browsers, among other metrics. AC-802 will be available in May. It costs $40,000 to $50,000, depending on model.

Unisys to release data center server

■ BY TOM KRAZIT

Unisys will try to convince IT managers to consolidate multiple servers into its new ES7000/560 server when the product launches in June.

Introduced last week, the ES7000/560 combines three data center functions into one machine, says Mark Feverston, vice president for enterprise server marketing at Unisys. The server features up to 32 Xeon MP processors and up to 32 Itanium 2 processors to handle both 32-bit application serving and 64-bit databases, and blade servers for Web infrastructure management.

Customers can manage their Web infrastructure with the ability to add up to 42 PCI blade servers, Feverston says. The package comes with Unisys' Server Sentinel management software to help make enterprise data server environments easy to manage.

"[Customers] will have the ability to manipulate and add the right processing resources at the right moment. You don't have to buy an infrastructure for only one function," he says.

However, consolidation is a tricky undertaking, says John Enck, a vice president with Gartner. "There are no easy answers to consolidation. This is a partial answer, for certain types of applications," he says.

For example, the Windows operating system does not lend itself to running multiple applications, Enck says. The ES7000/560 lets the user partition the server, so multiple copies of the operating system can be used, but those multiple software images don't help an IT manager consolidate his environment, he says.

The new server lets data center managers consolidate the physical area that multiple servers take up, which can come as quite a relief to companies trying to save space, Enck says.

Unisys' ES7000/560 can run blade servers, 32-bit applications and 64-bit databases, the company says.

The dual Xeon/Itanium construction is unique among the major server vendors, Enck says. But the ability to add the blades right into the server housing, rather than having to build a rack for their storage, will be more attractive to buyers than the ability to run 32-bit and 64-bit applications next to each other, he says. "I just haven't seen a lot of interest in Itanium," he says.

Unisys expects that small or midsize businesses will use the new server to run their IT infrastructures, or that larger enterprise customers will purchase two or three, Feverston says. A base configuration of the server with 16 of Intel's 2.0GHz Xeon MP processors and eight Itanium 2 processors costs $250,000.

Along with the base configuration, users can choose different "starter kit" assortments of blade servers based on their companies' needs, such as load balancing, DNS management and others. The server is scheduled to be available in June.

Companies without a history of data center expertise will be interested in the ES7000/560, Enck says. The services and support that Unisys provides with the server will make it easier for companies to get an enterprise-class data center up and running, he says.

Krazit is a correspondent with the IDG News Service's Boston bureau.

Site: Lessons from leading users

Ohio State adapts course content for PDAs

■ BY JOHN COX

Lectures in the Palm in your hand

Medical students on field assignments around the state were cut off from Web-based courseware. Palm PDAs, memory cards and reformatted content now give them a classroom in their hands.

High-res medical image files

Power Point slides

① → **PDF template for handheld display** **②**

PC

Server **③**

64M byte Secure Digital memory card

Synchronization via cradle or infrared

Palm Tungsten PDA

① Power Point files, images and text are collected on a server.

② Using PDF template and PC, files reformatted for a Palm display screen.

③ Courseware is transferred from Web server to Secure Digital card or is accessed via PDA synchronization.

Medical students at The Ohio State University in Columbus are no longer tethered to their desks, thanks to an $8,000 project that lets them carry a key application with them on hospital floors.

Using plug-in memory cards, a group of medical students now has instant access to a set of 11 text-and-image teaching modules. The students now can carry the modules on Palm Tungstens and m505 or m515 PDAs. The modules consist of Power Point slides and medical images that formerly were accessible only via PCs reading CD-ROMs or accessing a Web server.
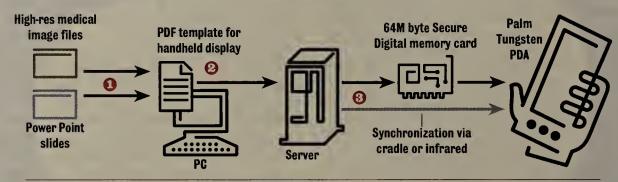
The documents were redesigned specifically for the Palm displays, says Robert McKenney, adjunct instructor for Biomedical Informatics and director of information systems for student educational services. To create responsive user interaction, minimize network download times and free up the Palm's built-in memory, the documents are stored in postage-stamp-sized Secure Digital cards that can store up to 64M bytes of data.

Until this change, the PDAs distributed to 1,600 medical students, residents, physicians and other medical staff have been mainly reference tools: Using a host PC or an infrared port, users could download a limited subset of data via infrared ports at the OSU Medical Center's main sites. The data included a physician desk reference for medications and recent patient census data.

Now instructional material can be adapted from PC and Web formats, stored in Secure Digital cards and used by students anywhere. An additional software program lets students fill in some forms that are designed to evaluate the instructional graphical user interface and the interactions. IT staff and professors upload and review these forms.

The initial PDA project, launched in 2001, also included a middleware component, based on AvantGo software, to let users synchronize their handhelds with a number of selected databases.

The project won widespread praise: It earned the American Hospital Association's Innovator Award, the 2001 Elizabeth Davies Award for accomplishments in providing electronic medical records and an honorable mention in *Network World's* 2002 annual User Excellence awards (www.nwfusion.com, DocFinder: 5642).

In 2002, to make the PDA more valuable, McKenney's staff decided that distributing new content to the handhelds could pay off. They focused initially on third-year medical students, who have to work their way through a heavy load of studying modules, in such areas as drug abuse and obstetrics, while serving "clerkships" at participating hospitals around the state.

Until now, the only way they could access these instructional modules was via a PC, which meant that the clerking students were cut off from a vital source of information for much of the day.

There were some formidable challenges to adapting the documents and their images for the a tiny screen of a mobile device.

McKenney's team created and refined a standard graphical template that showed how the documents' text and graphics would be arranged and displayed. The display format was another standard: PDF files, made possible by installing Adobe Acrobat 2.0 on the PDA. Another variable in deciding to use the Secure Digital cards and in some cases upgrading to Palm's newest model: the Tungsten, with more memory, better screen display and a more powerful processor than the earlier models. McKenney says one Secure Digital card can hold almost as much as a CD-ROM.

"The images were tough," McKenney says. "At first, we thought if we condensed the image, we'd compromise its performance on the device. But in fact, on the Tungsten, we found the image was enriched and quickly manipulated. Acrobat 2.0 lets you magnify the image and zoom in and out."

Adtran pumps up VPN support in low-end routers

■ BY TIM GREENE

NETWORLD+INTEROP

HUNTSVILLE, ALA. — Adtran this week is continuing its attempt to give corporate customers low-priced remote network gear while trying to undercut the prices of low-end Cisco routers.

At NetWorld+Interop, the company plans to announce VPN support for the NetVanta 3200 and NetVanta 3305 routers, an upgrade the company had promised by year-end. The devices now can let users create either site-to-site or remote-access IP Security VPNs over the Internet.

Adtran says these routers are aimed at Cisco's 1720, 2611 and 2621 routers, all of which can support VPNs. The management interface for the Adtran gear mimics Cisco's command-line interface (CLI).

The company has set up a Web site, www.dare2compare.adtran. com, where potential customers can simulate configuring an Adtran router based on their knowledge of Cisco's CLI.

The price of the Adtran gear is also notable vs. Cisco's. The Net-Vanta 3200 costs $1,490 with VPN support, while the Cisco 1720 costs more than $2,000 and can cost more, depending on options.

While Adtran says its gear can cost half that of the comparable Cisco product, the trade-off is they don't have all the features of a Cisco, says Zeus Kerravala, an analyst with The Yankee Group.

The Adtran gear has no quality-of-service mechanism, whereas this is a Cisco strong point. Adtran supports only IP, while Cisco supports IP, IPX, Apple Talk and SNA. Until the VPN upgrade, Adtran supported only RIP 1 and RIP 2, but is adding Open Shortest Path First routing support. Cisco supports these protocols plus some of its own.

"I don't see a lot of companies getting rid of their Cisco gear to buy Adtran. And they won't mix them. They're not going buy six Cisco routers and four Adtran," Kerravala says.
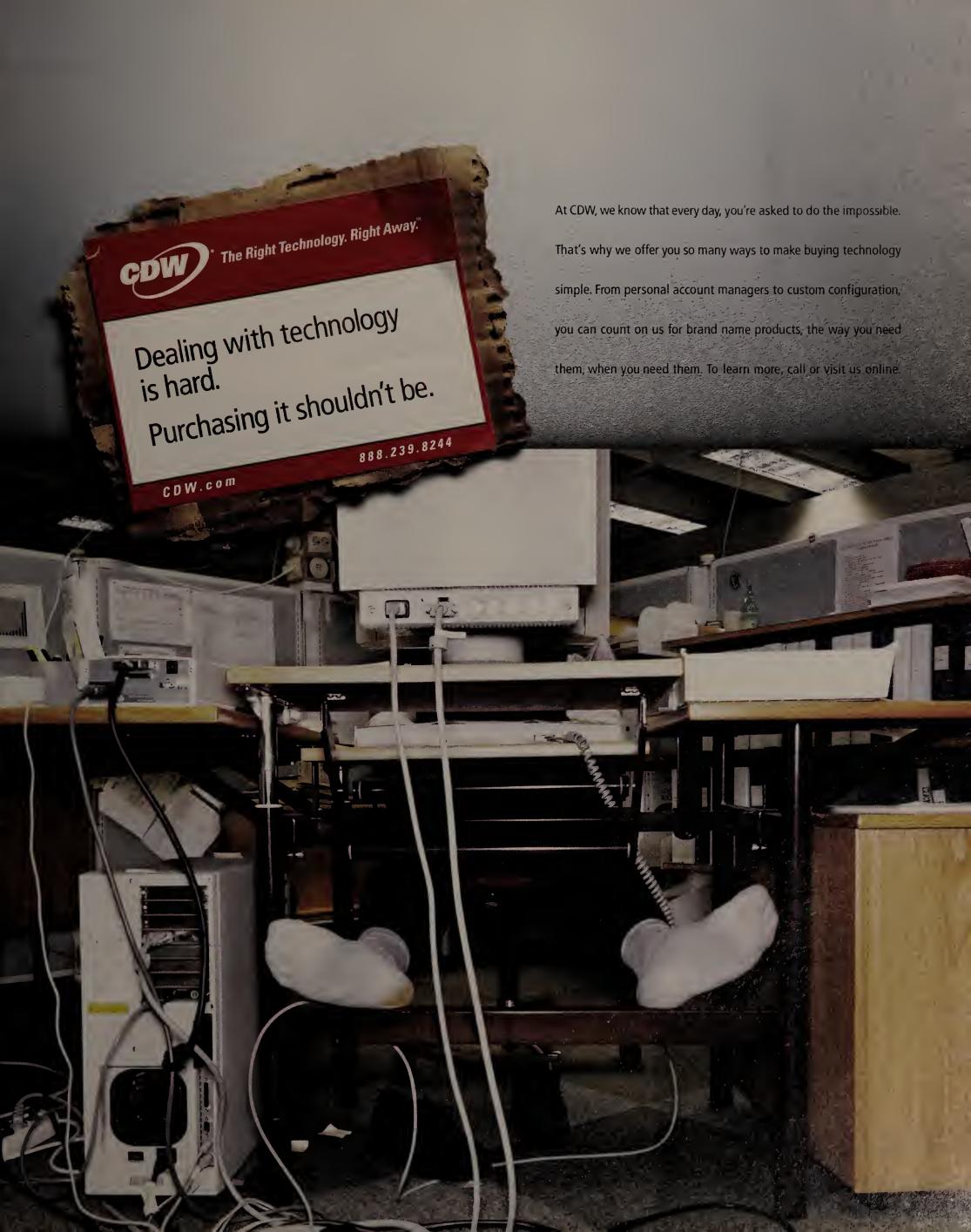
The price is what drove Spark Engineering in Richmond, Va., to buy a NetVanta 3200. "It was a good deal compared to Cisco," said Bill Riley, the company's managing partner.

Branch office routers claim about $2 billion per year in sales, according to IDC, with Cisco taking the lead, followed Linksys, Efficient, Vanguard Managed Systems and Zyxel.

NetVanta 3305 costs $2,290 with VPN support. NetVanta 3200 and NetVanta 3305 will be available next month.

Adtran also is introducing a high-speed, point-to-point wireless device that can connect LANs in places where it is difficult or expensive to buy wired connections. The Tracer 5045, available next month, will cost $11,100. ■

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TOLLY ON TECHNOLOGY
Kevin Tolly

The Gigabit killer app is within vendors' reach

Every story written about Gigabit Ethernet to the desktop, it seems, has an obligatory reference to the "killer app." Most analysts note that, well, there isn't one. Intel says you don't need one. I disagree with both assessments.

Analysts start with taking on the cliché of "real-time video" being the poster child for Gigabit desktop applications by noting, accurately, that business-grade video doesn't even put a strain on Fast Ethernet desktop links. (See www.nwfusion.com, DocFinder: 5644.)

For its part, Intel engages in a clever bit of obfuscation. The company concurs that there is no app that can use anywhere near the full bandwidth of Gigabit Ethernet — but you still need Gigabit

Ethernet. Why? Because in today's multitasking world, you'll likely be running lots of bandwidth-needy applications simultaneously. Thus, it is something of an aggregate killer app that replaces the single killer app of old. (See DocFinder: 5645.)

There is a killer app — it isn't sexy and it is sitting right in front of everyone's face: bulk data transfer. If there is one universal truth in enterprise computing these days, it's that users are dealing with larger and larger chunks of data all the time. As databases have become more sophisticated and more portable, we even have end users synchronizing nontrivial data stores between client and server.

Moving 500M bytes of data between client and server is common.

With Gigabit Ethernet's theoretical capacity of more than 100M byte/sec (in just one direction), it should take just 5 seconds for such a file to move across the network. However, Windows 2000 users on very high-end machines will find that it takes more than 90 seconds to move this much data using Windows file copy utility.

Even using purpose-built "data mover" applications such as Retrospect from Dantz, the transfer takes some 40 seconds — eight times longer than one would expect. This Gigabit Ethernet performance isn't even twice as fast as when run across Fast Ethernet. Bumping up an order of magnitude in bandwidth, you'd expect to see a more dramatic improvement in throughput. But you don't.

And Sonic Solutions' Backup MyPC product fared worse, with its Gigabit results barely besting the Dantz Fast Ethernet results. (Note: This information is the result of independent research that The Tolly Group conducted; ITclarity report number 503001.)

Being able to move 500M bytes in 5 seconds rather than 90 seconds sounds like a killer app to me. The absence of this killer app isn't the fault of Gigabit Ethernet — it can handle the load — it is the fault of application vendors who've just tuned out the whole issue.

A big stumbling block for app vendors is that they've grown accustomed to the old-

fashioned, DOS-style, single-tasking way of doing things. In every case, the programs we studied seem to do their work one file at a time. Clearly, a parallel approach is needed to keep that Gigabit pipeline full.

Equally problematic is that all of these applications rely on using the Common Internet File System file access model for interacting with the remote file system. You might remember this better as Server Message Block. If you are wondering if this could possibly be related to the Server Message Block protocol first put forth by IBM in the mid-1980s, the answer, sorry to say, is yes. It's basically the same thing.

Maybe Intel or Dell should pay some app vendor to write this killer app. Then they could really wave the flag about Gigabit Ethernet. Until then, it remains a story of unrealized potential.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com.

Grid

need to redesign their networks or add new services. Mission-critical grid applications require some traffic engineering to ensure prioritization. Grid applications require higher availability and redundancy because they're distributed across a network.

"If you manage your own grid environment, you want high redundancy in your network, which can be fairly expensive across the globe," says Bernhard Borges, senior technologist with IBM Business Consulting Services. "You need to be very cognizant about the network. Rather than looking at it as a transport mechanism, you have to look at it as part of the operating environment.…With e-mail, you can apologize if something doesn't get sent. With a grid application, you can't afford to do that."

Network features

Borges expects more features to be built into network hardware to accommodate grid applications. He says that routers will need additional smarts to understand the context of data being handled and how it fits into the grid.

He also expects network administration and management software to require additional features for grid computing. "Grids will require more administration than your average network," he says.

Grid computing also is likely to influence the future direction of the Internet, experts say.

The academic organizations involved in the nation's largest grid project — the National Science Foundation's multiyear, multimillion dollar TeraGrid project — already can see some effect on the backbone network, which operates at 10G bit/sec.

Defining grid

Grid applications typically are classified according to the networks they use:

- Intranet grids involve a company distributing an application across its own private IP infrastructure.

- Extranet grids let a company take advantage of the networks belonging to its business partners.

- Internet grids run across the public Internet.

"Grid computing represents the most leading-edge applications that we have over the backbone," says Steve Corbato, director of backbone network infrastructure for Internet2 and a collaborator on the TeraGrid. For grids, you "clearly need bandwidth, and you need a well-engineered local network environment. One of the things our community has discovered is that most performance problems happen at the edge," he says.

Corbato says TeraGrid researchers need at least gigabit-speed LANs to take advantage of the high-performance WAN connections available on the project.

High-performance grids also require some tweaks to Internet protocols. Corbato says TeraGrid researchers need larger packet sizes to sustain high TCP loads. By doubling the size of the packets that the TeraGrid network can handle, researchers have found they can significantly reduce the packet number that needs to be sent, thereby increasing network performance.

"Large [packet sizes] reduce the load on the network interface card and improve the ability to drive high-performance loads

across the backbone," Corbato says.

One challenge with TeraGrid is scheduling the network resource, says Wesley Kaplow, CEO for Qwest's Government Services division. Qwest is providing four 10G channels to the TeraGrid project, which links government-funded high-performance computer centers in Illinois and California.

"When you only have four major sites to start with, scheduling is not that big of a deal," Kaplow says. "But as you increase the site number, you basically get back to the same kind of best-effort network we have on the Internet today. … Part of the issue with the TeraGrid is to understand the computer-to-network connectivity issue and to do resource scheduling and assignment."

Kaplow says the key to solving the network scheduling challenge is the development of next-generation middleware, which is being tackled under a separate NSF-funded initiative.

"The middleware must understand the network topology and components, including optical switches and routers," Kaplow says. "The challenge is to go from the Internet model of today, with thousands of small flows that aggregate up to large traffic to systems with relatively few flows that [can take full advantage] of the characteristics of the channels."

Experts say that if grid computing achieves its promise, it could have a profound effect on the way that public and private networks are designed and operated. However, these changes will take place over the next decade.

"I don't think people realize how pervasive [grid computing] is going to be and how big a shift it is going to be in how people get e-mail, how files are backed up and the level of communications on each machine," Hennessey says. "I really do think it's going to be the biggest shift we see over the next eight years or so." ■

Ohio

The images can't be used for detailed diagnostic work on patients, but for students and professors, the images are detailed enough for instructional use. McKenney discovered that working with the most detailed, high-quality image possible is critical for a high-quality display on the Tungsten.

He also discovered the simplest and fastest way to distribute the documents was via the Secure Digital card, a format available now to about 150 medical students. But other PDA users can synchronize their PDAs through their PCs, using the AvantGo middleware, to download the same documents from a Web server. Users click to select the modules they want from a simple, clear list displayed on PDA.

The new handheld format and distribution project has proven to be so successful that other OSU departments, such as engineering and agriculture, are evaluating its use for their students.

The OSU Medical Center is not yet using the PDAs on either wireless LANs or wide-area cellular data networks.

"We're testing some of that," McKenney says. Wireless will bring a number of complex challenges: more drain on the PDA's battery, a new physical infrastructure and security issues, he says. ■

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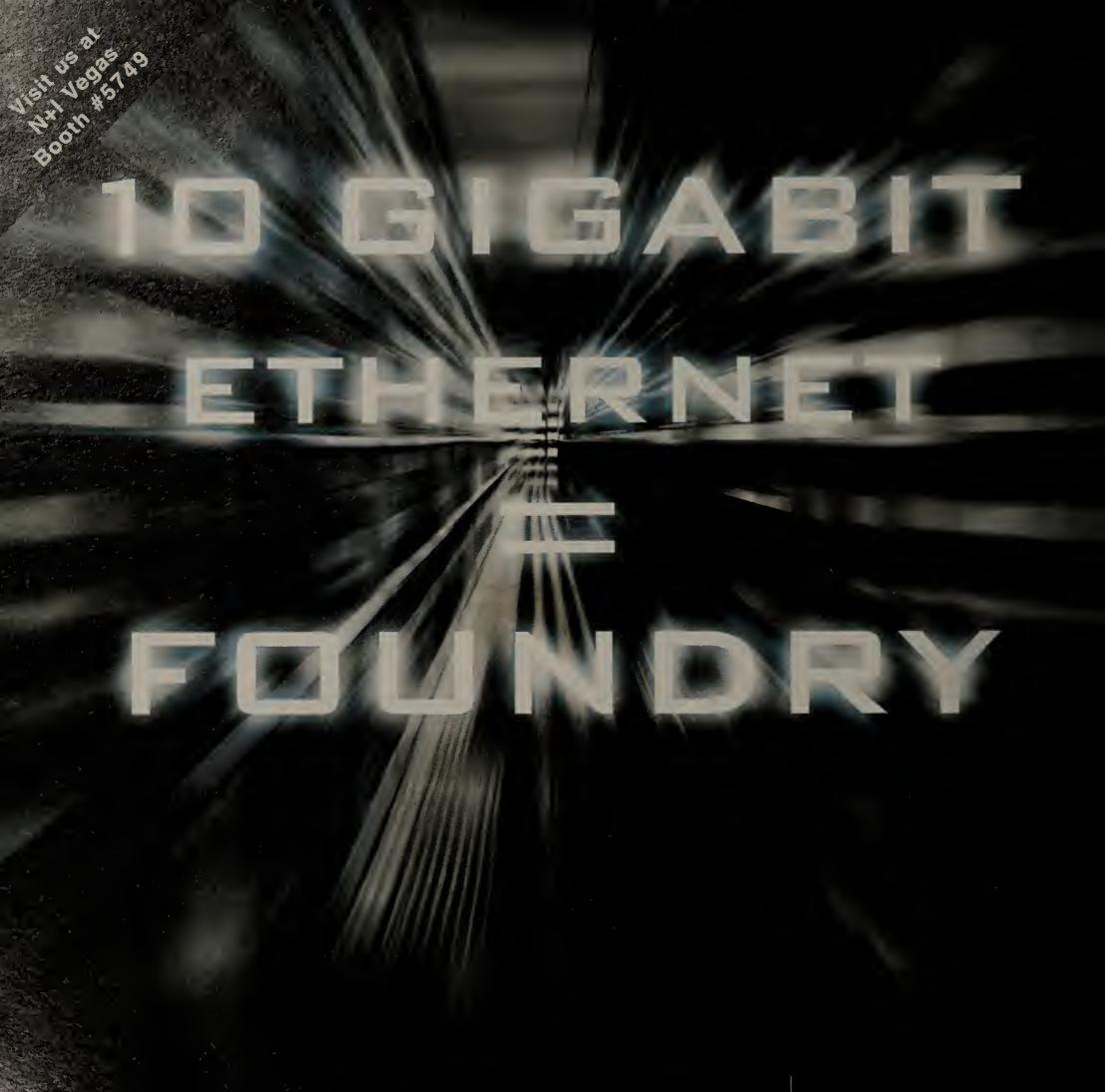
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Enterprise Applications

Key Web services protocol gets help

Next version of UDDI will feature improved security, policy controls.

■ BY JOHN FONTANA

A protocol described as one of the four pillars of Web services might finally be ready to live up to its grandiose billing and signal the start of the next phase of corporate adoption for the emerging technology.

The Universal Discovery, Description and Integration (UDDI) protocol has been the ugly stepchild to XML, Simple Object Access Protocol (SOAP) and Web Services Description Language (WSDL), which have all gained favor as Web services have been tested and adopted by leading-edge corporations.

Originally billed as a public directory of Web services to find and connect to Web services components that live on a network or the Internet, UDDI has failed to meet that promise mostly because of issues related to securing data and access.

A public UDDI directory called UDDI

Business Registry maintained by Microsoft, IBM, SAP and NTT Communications is not much more than a conceptual model.

However, with the expected release in the fall of Version 3 of the UDDI specification, which was turned over to the Organization for the Advancement of Structured Information Standards (OASIS) last fall, the protocol is getting the security and policy controls that might lift its acceptance among Web services adopters. Version 3 is seen as the key for creating private, semi-private and public UDDI registries that could be integrated at various levels.

Version 3 also positions UDDI to become the linchpin for the next wave of Web services, which ties together multiple Web services into composite applications.

"Version 3 is a major advance toward being able to trust the data in the registry and know that it is valid," says Tom Bellwood, co-chair of the OASIS UDDI technical committee.

UDDI's role will be as a registry of Web services that live on the network. As multiple Web services are connected to form composite applications, such as an ordering system consisting of multiple Web services, UDDI would be the hub that holds together that association of Web services.

The concept is similar to the Domain Name Service on the Internet where Web site addresses such as www.nwfusion.com remain fixed entries in the DNS registry, while the location or IP address of the site can be changed.

The UDDI registry is a locator service that allows Web services to be linked on the fly and change locations on the network without breaking the composite application. The registry provides flexibili-

UDDI Version 3

The Universal Discovery, Description and Integration (UDDI) protocol has not lived up to its billing as the foundation for a public directory where users can find and connect to Web services, mostly because of access and security issues.

Key UDDI Version 3 additions	Improvements
Policy	Expanded role of policy allows more flexibility for implementation.
Digital signature	Ensures content can't be changed; fosters trust in registry.
Multiregistry support	Allows secure mesh of public, semiprivate and private registries.
Subscription API	Users can track content changes made to registries.

FVC blends Web and videoconferencing

■ BY JASON MESERVE

SANTA CLARA — First Virtual Communications last week released Click to Meet Express 2.0, a software-based conferencing product that combines the features of traditional videoconferencing with Web conferencing in an effort to help users more easily share multimedia applications.

Click to Meet Express operates on standard PC hardware running most versions of Windows and works with FVC's Conference Server product, a software-based multipoint control unit that connects multiple users in a single call and stores shared documents and files used in the call. No specialized equipment is required, as a standard PC microphone and Webcam camera can be used to provide audio and video. Optionally, Conference Server can integrate with a third-party phone bridge to connect users on the telephone.

To make setting up meetings and inviting participants easier, FVC has integrated Click to Meet Express with Microsoft's Messenger instant-messaging client, which

provides a directory of users and the ability to detect whether a user is online. Meetings can include audio and video, slides, shared files or a combination of media. Video or Internet-based audio is not required to use the product, as it can be used in a slide-show-only mode, similar to online tools WebEx and PlaceWare offer.

"It's got a flexible screen setup," says Andrew Davis, an analyst at Wainhouse Research. "You can have data-intensive or video-intensive meetings and can switch between the two on the fly.... No one has really done that before."

The user interface in Version 2.0 has been rewritten with a combination of Dynamic HTML and XML, making it more customizable, says Gary Dietz, senior product manager at FVC. Slides, video and a text-chat window can be arranged in a number of ways by users or as a set layout dictated by a moderator for all attendees.

Also new in Version 2.0 is the ability to call out to telephone users and any H.323- or Session Initiation Protocol-compliant

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Short Takes

■ Virtual directory vendor **Octet-String** has released Version 2.0 of its **Virtual Directory Engine Suite.** The new software features Join Adapter for consolidating identity information that resides in existing directories and databases to support secure authentication and authorization services. Join Adapter ships with three sample join templates: a simple join, a one-to-one matching of identity records; a one-to-many join; and a shadow join for virtually adding unique application attributes to the enterprise directory. Information in identity repositories can be joined into a single view and made available to applications via the Lightweight Directory Access Protocol, Java Database Connectivity protocol or XML. VDE is a Java application that runs on Windows, Sun Solaris, IBM AIX, HP-UX and Linux. Pricing for VDE Suite is $35,000 per server.

■ Several months after announcing plans for a .Net integrated development environment to compete with Microsoft's Visual Studio .Net, **Borland** last week said it would offer a complete suite of .Net application development tools. Borland also announced the name for its .Net IDE, previously code-named Sidewinder. Now known as **Borland C#Builder,** it is on track for a midyear release. Meanwhile, Borland plans to offer by year-end a suite of its .Net tools, including its design, development, collaboration and optimization products. Pricing details on C#Builder will be available closer to the product's launch, Borland said.

■ **Network Associates' McAfee Security** division announced **spam-prevention software** for businesses that use Exchange Server with 500 mailboxes or fewer. SpamKiller for Exchange for Small Business, which costs about $20 per seat, lets administrators decide to weed out spam at the server or pass it along into a "gray-area" junk folder for review.

Site: Lessons from Leading Users
Staples switches Web search tools

BY ANN BEDNARZ

After a flurry of comments from customers saying it was hard to find products on Staples' Web site, the office supplies retailer decided its homegrown search engine needed to go. In its place Staples implemented self-service search and navigation software from iPhrase Technologies.
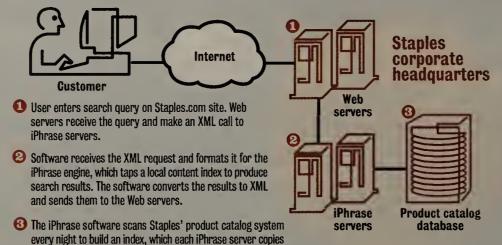
The company's original search technology wasn't delivering the results that customers wanted, says Tom House, senior project manager at Staples in Framingham, Mass. "Our customers did not find our existing search engine and our search interface easy to use," House says. "They didn't feel that the results they were getting back were relevant to the search terms they entered."

As a result, people were abandoning Staples' consumer and small-business Web site when their searches yielded poor results, instead of sticking around to buy items. According to Web logs, the "search results" page was where Staples lost the most visitors to its Staples.com site, House says.

Poor site search is a common problem, according to Jupiter Research. The firm estimates that Webwide search tools, such as Google, outperform local Web site search tools 52% of the time. Among 1,482 users Jupiter surveyed, 45% reported that with most companies' key-

Catalog control

Staples rolled out self-service search software from iPhrase to speed better results to customer Web queries.

① User enters search query on Staples.com site. Web servers receive the query and make an XML call to iPhrase servers.

② Software receives the XML request and formats it for the iPhrase engine, which taps a local content index to produce search results. The software converts the results to XML and sends them to the Web servers.

③ The iPhrase software scans Staples' product catalog system every night to build an index, which each iPhrase server copies and runs locally to speed performance and provide redundancy.

word-based search features, it's too time-consuming to page through results; 39% said misspellings are poorly handled; and 38% said search results typically are not relevant.

To combat these issues, iPhrase — along with competitors such as Applied Semantics, Ask Jeeves and Primus Knowledge Solutions — uses natural-language-processing technology that interprets the meaning of a customer's request, phrased in everyday language, and retrieves the most pertinent information. IPhrase's One Step software automatically adjusts to handle misspellings, synonyms and abbreviations, the vendor says.

One Step also can weed through struc-

tured and unstructured data. Initially, Staples is most interested in the software's structured data-search capabilities, because the Web site's primary content source is Staples' 40,000-item product catalog, House says.

Eventually the retailer plans to expand its search features to include unstructured data, such as its online help resources, House says. The retailer also might roll out the iPhrase software to its other Web properties, such as the Web site of its Quill Corp., subsidiary.

Staples started evaluating search vendors last year after feedback from e-commerce research site BizRate.com indicated customers were unhappy with its

Web site search capabilities. Roughly 30% of the comments Staples received from BizRate were about its search engine — which hadn't been updated since Staples built it five years ago, House says. "It was in real dire need of an update, as our customers told us pretty loud and clear," he says.

After evaluating a dozen vendors and short-listing three for on-site pilots, Staples chose iPhrase. Staples went live with the vendor's One Step software in February. It's too early to tell if the new software will increase Staples' online sales, House says. But the revamped search features have yielded positive reviews from users, and Staples' customer service representatives are logging fewer phone calls from people having Web site search problems, he says.

Staples' sales and marketing associates also are benefiting from the new software, which allows them to track visitors' search patterns and modify search engine parameters as needed, House says. "If we see customers enter a search term that the iPhrase engine by default is not catching as a misspelling, we allow our internal associates to configure the search engine to capture that misspelling and correct it on the fly," he says.

With the old software, Staples associates could see problems customers were having with the search engine, but weren't able to tweak the search engine to correct the problems. ■

BMC looks to ease mainframe management

BY DENISE DUBIE

HOUSTON — BMC Software last week introduced a software suite the company says will kill two management birds with one stone: The company's new Java-based System Advisor portfolio will help customers that are short on staff manage Big Iron operating systems.

BMC's System Advisor suite will be an integrated set of about 20 products for configuring and managing IBM's mainframe z/OS and OS/390 operating systems. The company says the product suite will lessen the learning curve for network staff unfamiliar with managing legacy systems by providing a Web-based, Windows-like user interface alternative to the typical green screen used to manage mainframe components.

The software also can feed mainframe management data into distributed systems

management tools such as Computer Associates' Unicenter and IBM's Tivoli Enterprise Console. This will help network managers more easily correlate how mainframe systems might affect performance of applications running on the boxes, the company says.

The central software in the suite, System Explorer, provides a Java-based graphical user interface that interacts with zSeries mainframes to perform common management tasks such as viewing partitioned data sets and systems resources in one interface (see graphic at www.nwfusion. com, DocFinder: 5643). BMC says the software simplifies the most commonly used functions for managing z/OS, including file management and job management with a point-and-click Web interface.

"The software masks the complexity of the mainframe environment with a simple distributed interface," says Calvin

Guidry, vice president and general manager of enterprise systems management at BMC. "The software is written to include knowledge of how to manage z/OS so network managers can get [it] up and running quickly."

Mainframe components are typically managed through 3270 screens, which involve writing commands using tools such as Interactive System Productivity Facility (ISPF) and System Display and Search Facility (SDSF) from IBM. ISPF is a software library-management tool for versioning and auditing source code. It includes configuration management to track all application components, and supports management of data sets and simplified data management services. SDSF provides a secure way to monitor, manage and control z/OS Sysplex environments.
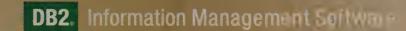
"I see the main benefit of [System Explorer] as providing a point-and-click
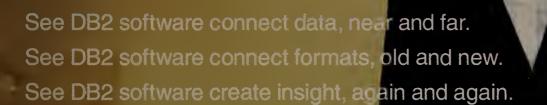
interface to mainframe functions, which allows people new to the mainframe to be more productive. They don't have to learn ISPF," says Larry Riggen, principal technology consultant at energy provider Cinergy in Cincinnati.

BMC says part of its motivation to design System Explorer to look more like a distributed management console than traditional mainframe management interfaces is the diminishing pool of IT professionals with mainframe skills (see DocFinder: 5647)

BMC says future products in the System Advisor family will address areas such as Sysplex operation, workload management, system parameters, system logging, restart management, data integrity and mainframe storage.

System Explorer for z/OS is priced starting at $11,700 and varies depending on configuration. ■

Until the 'Net is fast enough?

I t sure seems like a good idea. The biggest computer retail chain or smallest mom and pop store could sell a range of software while dedicating only a few square feet of floor space to the effort. But it's taking a long time to get going — maybe, just maybe, things will happen this summer.

About three years ago, Protocol Technologies announced Software ToGo, a burn-to-order software distribution system. A customer would select the software they desired by using a small, LCD-based stand-alone kiosk and get a bar-coded order ticket in return. The customer then would take the ticket to a cashier and pay for the software.

The ticket would be used to tell an order-fulfillment station what the customer had bought. The order-fulfillment station would use a secure Internet connection to get a key to unlock a copy of the desired software on a disk drive in the station and burn the software onto a CD on the spot. The station also would print full-color inserts for the CD case and a set of quick-start instructions, complete with a unique serial number and "certificate of authenticity."

The clerk would assemble the package and hand it to the customer. The burning and assembly process should take less than 5 minutes. Protocol Technologies has at least one U.S. patent (5,784,460) related to the system.

The press releases on the Protocol Technologies Web site show that some high-profile companies were going to test the system, including Office Depot and Radio Shack. But the site does not have any information on how those trials went. The most recent development seems to be that CompUSA will deploy the system in its stores this summer, according to Apple Computers (www.nwfusion.com, DocFinder: 5633).

If the system works as advertised, CompUSA could "stock" a far wider range of software, including old or eclectic titles, than it otherwise could. But the system's success will heavily depend on getting a wide range of software publishers to sign up. Protocol Technologies' Web site says that "Software ToGo carries products from close to 90% of the top-selling software publishers" without saying how many titles are carried from each publisher or who the publishers are.

Software is not the only material that is suitable for a burn-on-demand system. A few baby steps are under way for burn-on-demand custom-mix music CDs. Sony Music seems to be experimenting with the idea, but as a burn-and-ship service rather than an in-store system. Sony has set up a Web site where you can build your own Bob Dylan CD, but with a quite limited repertoire, only one or two songs from 35 of Dylan's 46 albums. Sony then will ship the CD to you.

I hope that both of these ideas are successful and temporary. The first application, software delivery, can already be done quite well over broadband Internet and should be done that way far more often in the future. The second application, music delivery, is waiting for music publishers to understand that there is an Internet they can use, not just fight.

Disclaimer: Harvard uses physical self-delivery of its main product, educated students, and has not expressed an opinion about using the Internet instead.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@ sobco.com.

UDDI

ty so application components can be "loosely coupled" and readily reused instead of hardwired together and rigid. UDDI also can find downed Web services components and point to where a composite application is broken.

"People are still trying to learn how to use Web services correctly," says Ron Schmelzer, an analyst with research firm ZapThink. "Replacing proprietary interfaces with standard Web services interfaces in point-to-point connections is not that interesting. You have to change your environment to a service-oriented architecture, and to do that you need UDDI as a discovery component. Version 3 is the first workable version to support that role."

In a service-oriented architecture (SOA) application components live as services on the network and can be assembled in infinite combinations. SOA was first introduced with Distributed Component Object Model and the Common Object Request Broker Architecture.

The importance of SOA components is on the rise as Web services adopters evolve from simple point-to-point integration of legacy applications using Web services interfaces to more sophisticated integration of multiple native Web services applications.

"When we started to build more-complex Web services applications we quickly found we needed things such as monitoring, caching, orchestration and a registry," says Carroll Pleasant, associate technologies analyst for Eastman Chemical.

The Kingsport, Tenn., company has built an application called Management Scorecard that pulls together 23 Web services that provide such information such as financial, manufacturing and regulatory data into a single application for execu-

> ## ❝ UDDI is the glue that ties together the whole Web services idea of loosely coupled applications. ❞
>
> **Ted Haeger**
> Director of product management, Novell

tives. Scorecard's components are held together using a UDDI registry.

"We've built a pretty good understanding of how to develop around Web services and we've appointed an architecture team to find out how to build an SOA at Eastman," Pleasant says. "We know that a registry is key in that it knows where everything is and it gives you location transparency."

Eastman can query the registry for access to a Web service instead of trying to hard-code connections between 23 Web services. Pleasant is evaluating UDDI Version 3 to make that task

easier and more secure.

Security and privacy issues have dogged UDDI since its inception, relegating its use to behind corporate firewalls.

Companies such as Fujitsu, IBM, Microsoft and Novell offer UDDI registries, and other UDDI implementations will likely show up in products such as application servers or integration brokers.

Version 3 has created a new security model based on a set of user-configured policies. The specification also supports the XML Digital Signatures standard, which ensures the source and integrity of data.

The forthcoming version will include dozens of policies for operations such as access control, replication, subscription, delegation, data transfer rights and UDDI keys, which are unique identifiers attached to each entry.

"Policy is tied into security in that all security in [Version 3] is expressed as policies," says UDDI committee co-chair Bellwood. "The incorporation of signed data will help registries evolve, especially public registries."

Version 3 also will support a multiregistry environment where private corporate directories can

share select data with semiprivate directories, such as that of any industry hub, and with public registries that can be used as root authorities to control the assignment of UDDI keys.

The new specification also will have new search parameters, such as search for exact matches. A new subscription API lets users be notified of any changes to a specific registry entry and copy that change between registries. Version 3 also will introduce a new information model.

Bellwood says UDDI Version 3 is what the core group of Web services specifications has been waiting for to be complete. He credits other Web services specifications, such as WS-Security and the Security Assertion Markup Language, as keys to its development. He says more specifications such as reliable messaging will make UDDI a more secure and reliable protocol for all UDDI registry deployments.

"UDDI is the glue that ties together the whole Web services idea of loosely coupled applications," says Ted Haeger, director of product management for Novell's eDirectory and Nsure UDDI server. "If you can't locate a Web service, you can't use it." ■

FVC

endpoint registered with the Conference Server. This allows traditional group video systems from Polycom, Tandberg and others to be connected to the same conference. T.120 support also is included for sharing applications such as Microsoft Word or Excel.

Where services such as WebEx target one-to-many meetings, Dietz says FVC is targeting the small and midsize groups that need to have "a highly interactive conference."

One caveat with running a software-only video system is that the quality of video and number of participants being displayed on screen at the same time are dictated by the PC's processing capabilities. Davis warns that while video running controlled IP environments such as a LAN or WAN might be of good quality, those connecting over the Internet could have mixed results.

FVC competes with the WebEx and PlaceWare in the Web conferencing realm. In the video-conferencing arena, it competes with hardware-based desktop cameras from Polycom (the ViaVideo) and VCON (the ViGO).

Click to Meet Express 2.0 costs $7,400 for a four-concurrent user license, including the Conference Server. The Conference Server runs on Windows 2000 and 2003, Solaris and Red Hat Linux. ■

Special Focus

ENTERPRISE APPLICATIONS: The database.

Users take open source databases for a spin

■ BY JOHN COX

No one so far has ripped out a clustered Oracle 9i database on multiprocessor Sun servers and replaced it with a free, open source database downloaded from the Web, running on a bunch of Intel-based Linux servers.

But a growing number of network executives are pioneering these freely available data managers. They're finding that open source databases are reaching a state where they can become the latest addition to their inventory of open source tools, including the Linux operating system, the Apache Web server and the Tomcat Java servlet engine.

Users say the attractions include:

● Very fast performance, especially in read-only applications.

● No or nominal, licensing costs.

● Low administrative and operational costs.

Burlington Coat Factory Warehouse is a Linux user looking at the open source database technology. The Burlington, N.J., company deployed Linux servers in its retail stores nationwide a few years ago.

"We're not sure about embracing open source databases yet," says Brad Friedman, the company's vice president of information servers. "But we will probably do so in our retail locations. As to the back-end servers, we're still ingrained with Oracle, which has a fair amount of support for Linux."

Friedman's comment shows a typical pattern in companies that are weighing, or experimenting with open source databases. High-volume database updates, which are the essence of transaction-processing applications, remain anchored on products such as Oracle's 9i and IBM's DB2 Universal Database, and increasingly Microsoft's SQL Server. But there are a host of new application areas that don't require the complex, and expensive, features found in these massive products.

"Some of our groups that use Oracle never were wedded to Oracle's high-priced features," says Jeremy Zawodny, technical Yahoo, for Yahoo, Inc., in Sunnyvale, Calif. "If you don't need these features, you probably don't have to pay the price for them [with an open source alternative]."

At Yahoo, the MySQL open source database, from MySQL AB of Sweden, has "spread from being used by a few groups to the core infrastructure" of the Internet portal, Zawodny says. MySQL handles vast amounts of data from hundreds of daily news feeds, such as Associated Press and Reuters, stock market tickers and so on. The data is stored, marked up and posted in Web pages in response to mouse clicks by Yahoo visitors.

"MySQL is a core piece of that content-generation system," Zawodny says. "This alone accounts for a great deal of the content we publish on a daily basis."

Open source makeup

Open source databases typically are available for free or a nominal charge, and include complete source code. Finally, in accordance with the terms of the GNU General Public License (GPL), the users typically have the freedom to change any part of the source code, and use it without charge, as long as they publish the change. Once published, the change can be used by anyone.

An alternative arrangement is the Berkeley Software Development (BSD) license, used by PostgreSQL, which gives source code developers a proprietary head start of 24 months for their innovations, after which they become part of the public code base.

There is an array of open source databases. Firebird, based on Borland's venerable InterBase database (www.nwfusion.com, DocFinder: 5631), is one of the few that have the support and blessing of vendors or well-organized communities of coders.

MySQL also is proving popular in the open source community. "The open source world likes MySQL," Yahoo's Zawodny says. "Every time a new [programming] language comes out, usually the first thing developers do is add database connectivity to MySQL. There are bindings and drivers for all kinds of languages. You don't usually see this [response] with a closed commercial product."

features. Stored procedures and triggers, which have been relational programming standards for more than a decade in commercial products, are missing from some open products, such as MySQL, but not from PostgreSQL. Both features will be added to MySQL this year, according to the company.

A common criticism is that open databases don't support transactions or don't do so as well as the commercial products.

"MySQL has a fast database for content store, but it is still immature in terms of transaction processing on the back end," says Charles Garry, an analyst for Gartner, assessing open databases for a Gartner teleconference on server infrastructure.

Advocates say transaction support in open databases is improving.

Variety spices open source databases

Here's the rundown on key open source databases.

Product	MySQL 4.0	Red Hat database 2.1	SAP DB 7.4
Licensing	GNU General Public License optional commercial license.	No license specified.	GNU General Public License.
Features	● Supports "broad subset" of ANSI SQL99 standard. ● Runs on Linux, Microsoft Windows, various Unix platforms. ● Modular design lets users plug in different storage engines to suit applications.	● Supports "core constructs" of ANSI SQL92 standard. ● Runs on Red Hat Linux 7.3, 8.0 and Advanced Server. ● Mature DB project pioneered 25 years ago at the University of California, Berkeley.	● Supports SQL92, entry level. ● Runs on Linux (Intel), Microsoft Windows, leading Unix brands. ● Designed for high-volume, online transaction processing; 100 SAP developers handle development.

PostgreSQL is the most mature of the open databases, and PostgreSQL.org maintains an extensive and well-organized Web presence for its developer community. PostgreSQL, Inc. is a Canadian company that offers applications along with support services. Red Hat bases its product offering on PostgreSQL.

A storehouse of innovation?

The open databases are often storehouses of innovation. MySQL for example has won praise for an architecture that has a core relational manager which can be used by different kinds of plug-in "data handlers." Open source developers can write their own data handles for geographic data, for example. Oracle and DB2 also support such objects instead of just data in rows and tables. Red Hat's most recent version of its Red Hat Database has a highly automated installer. Again, the proprietary vendors also are automating their products.

But the open databases tend to be far simpler than their upscale rivals in all these areas. That's a major reason for their fast read performance, advocates say. And it also accounts for the low operational overhead.

"When you have a much less complex product, there are fewer things to watch, and fewer things to go wrong," Zawodny says. "You don't need a full-time [database administrator] looking after it. And that makes [the open database] cheaper, too."

To some, that same simplicity can make the open products seem "brain-dead" compared with Oracle and DB2's

Grown-up software
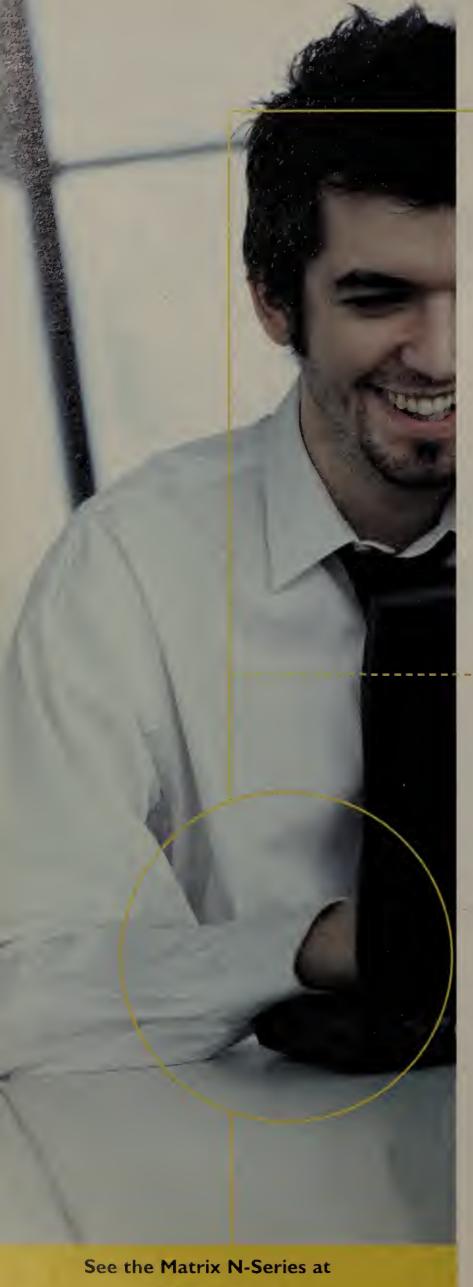
Immaturity in some areas of an open database might not be a problem if the software has what you need in other areas, or has a credible track record of delivering new features on a regular basis.

The open source model is not monolithic: There are variations on a theme. PostgreSQL.org is emblematic of the free source code model, in which the database code is not owned by anyone, and the community organizes development and enhancements. But the BSD license gives companies such as PostgreSQL, Inc., a 24-month claim on whatever innovations they might create.

By contrast, MySQL was developed in the mid-1990s as a Web database by three Scandinavian programmers. The company freely offers the source code under the GNU GPL. But it also offers a commercial license. According to MySQL CEO Marten Mickos, Cisco is a commercial licensee of MySQL, incorporating it in five products, including its network intrusion-detection software. "They came to us and said, 'we love your product, but our lawyers won't let us use it under the GPL,'" Mickos says. With the commercial license, any changes Cisco engineers make to the source code remain Cisco's intellectual property and a distinguishing feature of its product.

Yahoo has deployed MySQL under the GPL license. "I can download it, change it, use it my way forever, and never pay them a dime," Zawodny says. Another benefit is the community that springs up around a successful open source program, fixing, refining and improving it. ■

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Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGE AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS ■ CARRIER INFRASTRUCTURE DEVELOPMENTS

■ **MCI,** formerly WorldCom, announced its **Global Streaming Video** service last week. The carrier is teaming with **Yahoo Broadcast Solutions** to support the service. Business customers can sign up for three hours of live or archived video streaming to up to 500 simultaneous users for $7,500. Customers also have access to an MCI Conference Meeting Manager and 30 days of video archiving. MCI transfers video content to Yahoo's streaming server through a secure connection. Yahoo hosts, distributes and archives the video content. Global Streaming Video customers provide their audience with a user ID and password.

■ **Internap Network Services** is enhancing its performance-based routing services with a managed firewall offering. The service is geared toward small and midsize businesses with T-1 connections. The service includes a Cisco IOS firewall that Internap monitors 24/7. With the service, companies can protect internal systems from outside attacks, and monitor and manage connections to the Internet from inside the network, the service provider says. The service includes installation and configuration, interconnection with filtering services, network address translation and establishment of demilitarized zones for Web and e-mail servers.

■ **Sprint PCS Group** is targeting corporate customers with its latest voice-activated dialing service. Called **Sprint PCS Voice Command Business Directory,** the service lets a customer set up voice-activated dialing for all Sprint PCS wireless users in the company. The service is part of Sprint PCS Clear Wireless Workplace package. A network administrator manages the directory through a Sprint PCS Web site, where former employees can be deleted and new hires can be added to the list. Sprint PCS charges customers $250 to set up a corporate directory. Monthly charges start at $75 per month, in addition to regular wireless rates.

Sprint pitches frame over DSL

■ BY DENISE PAPPALARDO

LAS VEGAS — Sprint is promising to reduce local service costs by 25% to 30% for many customers with its Frame Relay over DSL service set to launch this week at NetWorld+Interop 2003.

Pitched as alternative connectivity to local frame relay, Sprint is using Covad Communications' local networks throughout the country to offer 192K up to 1.5M bit/sec DSL connectivity to its frame backbone. The carrier expects many low-speed frame relay customers to be interested in this offering because of rising local access

charges, says Larry DeNayer, manager of product planning and integration at the carrier.

The service also is targeting customers looking for a less-expensive back-up service that bypasses their incumbent local exchange carrier.

"Customers with 56K bit/sec frame relay service pay about $200 [per month] for aggressively priced access," DeNayer says. "Frame Relay over DSL customers will pay the same for 192K bit/sec DSL on a three-year contract."

The carrier says users that compare Sprint's Frame Relay over DSL service with

traditional access services at 1M bit/sec likely will see larger cost savings.

One industry expert says Sprint is on the right track with this offering.

"This is a positive development for Sprint," says Michael Suby, an analyst at Stratecast Partners. The carriers have expanded the reach of frame relay on the high end, offering 45M bit/sec support, so it makes sense to also expand it at the low end, he says.

Sprint is offering symmetrical DSL (SDSL) and ISDN over DSL (IDSL). While not nearly as popular as SDSL, IDSL can reach users who are farther away from a carrier's central office switch site. IDSL supports data transmissions up to 144K bit/sec to users up to 39,000 feet from a central office. SDSL supports data transmissions up to 1.5M bit/sec, but only for users who are within 18,000 feet of a central office.

While DSL will offer users another choice when it comes to local access, it will not be useful for customers who are paying some of the highest access fees. Traditional frame relay access provisioned by local exchange carriers can get very expensive for users in rural areas that are many miles from a central office. And the majority of those customers will not be able to use Sprint's new offering.

Sprint's Frame Relay over DSL includes a standard service-level agreement (SLA). The carrier guarantees its data delivery rate will average 99% at a minimum, and port availability will average 99.9% at a minimum. The SLA also promises latency will not exceed 150 millisec for port speeds above 256K bit/sec or 130 millisec for port speeds below 255K bit/sec.

The service also includes DSU/CSU gear from Paradyne, which connects to a user's existing frame relay router.

And although this is a new offering for Sprint and its frame customers, competitors have offered DSL to frame relay for two to three years. AT&T launched its DSL to frame service at the end of 2000. The carrier also offers users an option of using SDSL or IDSL at similar service rates.

AT&T charges users $165 per month for 128K bit/sec IDSL link and $440 per month for a 1M bit/sec SDSL link. These are AT&T's list prices and do not include discounts.

MCI, formerly WorldCom, launched its DSL to frame relay service in 1999. MCI's offer is available in two flavors: basic and premium. The two flavors differ based on the carrier's oversubscription rate, which

Lucent looks to tap enterprises — again

Partnerships, indirect channels line up for new markets.

■ BY JIM DUFFY

MURRAY HILL, N.J. — Three years after spinning off its enterprise operations into a new company called Avaya, Lucent is looking to re-engage with corporations through partnerships and indirect channels.

Lucent is awakening a global business partner program that company officials say has been dormant of late. The company is looking to tap new markets and sources of revenue to complement the direct relationships it has with the 30 to 50 biggest carriers in the world that make up the majority of its sales.

"Lucent has had some dark times recently, and they're looking for new opportunities," says Michael Doherty, research director for Ovum.

"They do carriers very well, but not other [markets] very well," he adds.
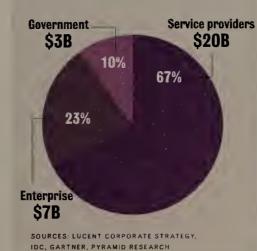
Although the partnership program's primary market is alternative service providers, corporations are second on the list and their contribution to revenue is expected to grow, says Frank Farese, vice president of Lucent's global business partners program.

"We get great access to the enterprise through partners," Farese says.

Lucent began to formalize its business partner program about six months ago with a $40 million investment and an infusion of about 210 employees, Farese

Lucent's business partner opportunity

A $30 billion market in 2003.

Government
$3B

Service providers
$20B

10%

67%

23%

Enterprise
$7B

SOURCES: LUCENT CORPORATE STRATEGY, IDC, GARTNER, PYRAMID RESEARCH

says. Alliances and indirect channels quietly racked up between $450 million and $550 million in revenue for Lucent last year, or about 4% of the company's overall revenue.

This year the unit is expected to accumulate between $550 million and $750 million, he says.

Seventy-five percent of that coming from alternative service providers with the remainder deriving from corporations, government, storage and cable providers,

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carrier

will make

communications

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The world's

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global IP

network

will make

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TOGETHER

Now, long distance, local calling and Internet service will be together. Voice and data networks for companies large and small will be together. The innovations of one of the world's largest Internet providers and the simplicity of one global network will be together. Under one name:

OpenReach supports WLAN security

■ BY TIM GREENE

WOBURN, MASS. — OpenReach is upgrading its IP Security and Secure Sockets Layer services to include protection of wireless LANs by using secure tunnels and then melding these local wireless tunnels into secure WAN connections over the Internet.

Version 5.0 of OpenReach IP WAN Services software lets OpenReach security gateways create SSL or IPSec sessions with any flavor of 802.11 wireless devices, shoring up the wireless security that many users don't trust (see graphic, right). The gateway can tunnel that connection through to a gateway at another corporate site using the Internet as the WAN connection.
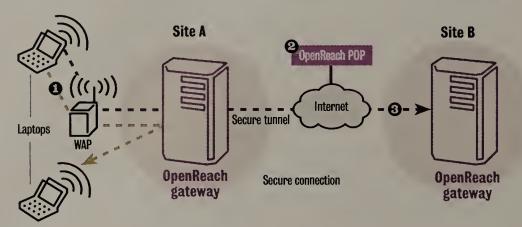
OpenReach is doing this via its software upgrade and by requiring a third network interface card (NIC) in the server hardware on which OpenReach's gateway software runs. The third NICs create separate network segments for connecting to wireless access points.

"This will enable us to buy dumb access points and use the OpenReach [gateways] for authentication [to the wireless network]," says Marc Palano, IT director for ITW, a manufacturing conglomerate in Glenview, Ill., that uses about 400 OpenReach gateways.

With this new feature, OpenReach is getting in early on a trend among IPSec VPN vendors of marrying local wireless and WAN security. Recently, SonicWall introduced a device for small offices that acts as a wireless access point, establishes IPSec tunnels with local wireless devices and

Secure wireless, Internet remote access

OpenReach has upgraded its SSL/IPSec gateway to secure wireless LANs.

① A wireless device establishes an SSL or IP Security session with the local OpenReach gateway, protecting the link from drive-by hacking, and the gateway bridges the link to another local wireless device or . . .

② The wireless device seeks a connection to a second corporate site via the Internet. In this case the server. checks with the OpenReach point of presence to coordinate a secure connection to the remote site.

③ Either by bridging an ecrypted tunnel or establishing a second tunnel, the gateway completes a link across the Internet to the second gateway that is secured from the wireless device.

also creates IPSec connections from that site to other sites over the Internet.

This fits in with an emerging move toward borderless networks where the LAN and WAN blend with less of a wall between the two, says Michael Suby, senior research analyst with Stratecast Partners. Open-Reach's LAN-WAN secure wireless bridge can simplify setting up security between sites, he says.

"Perhaps you work with one vendor for your LAN and a different vendor for your WAN. Now you're working in wireless, and you want a single security policy without gaps. In that case there is value to having a single-vendor approach," Suby says.

Potential vulnerabilities are a key factor that business IT executives weigh in deciding whether to use wireless gear, according to participants in a recent user roundtable held by Sage Research. "They are extremely apprehensive about wireless LAN security, to the extent that several have not deployed WLANs at all due to security concerns," says Chris Neal, a research director at Sage.

Along with the new wireless support, OpenReach IP WAN Services 5.0 software adds a tunnel-forwarding feature that lets network executives arrange their VPN in a

hub-and-spoke design to better control Internet access. Each ITW site has Internet access for connecting to the VPN, and that is all Palano wants that access to be used for. He does not want it to be used for general Internet access because that would require installing expensive firewalls at each site, he says.

The tunnel-forwarding feature lets ITW restrict branch-office use of the Internet to create a tunnel with a corporate hub site. All general Internet traffic from branch offices is funneled down this VPN tunnel to the hub, where it is routed back onto the Internet through the hub site's firewall.

This same feature lets customers tunnel connections between their branch offices by going through a hub site rather than connecting them directly. Tunnel-forwarding VPN connections among branch offices are made using two tunnels, one from a branch office to a central hub site and a second from the gateway at the hub and the gateway at a second branch office. This means the branch-office gateways need just one tunnel configuration rather than one for each of the other branch offices, greatly reducing the complexity of setting up the gateways.

Version 5.0 of the software also supports authentication from external Remote Authentication Dial-In User Service and Lightweight Directory Access Protocol servers, eliminating the need to make separate tables for the OpenReach gateways. It also allows use of RSA Security SecurID and CryptoCard authentication. The software also supports SNMP so customers can monitor their OpenReach service via their LAN management systems. ■

Sprint

refers to the number of users that subscribe to a service compared to the actual number of ports the carrier has to support that service. The basic service is oversubscribed at an eight-to-one (eight users to one port) ratio and the premium service is oversubscribed at a two-to-one (two users to one port) ratio. Customers that subscribe to the premium service should expect better throughput and network availability because fewer customers' traffic is fighting for the same port.

MCI charges $225 per month for basic and $300 for its premium 128K bit/sec DSL to frame relay. The carrier charges $525 for basic and $975 for its premium 1M bit/sec DSL to frame service. And like AT&T, these are MCI's list prices and do not include discounts.

Sprint's Frame Relay over DSL Service's lowest bandwidth option is at 192K bit/sec. The carrier charges $515 per month for its 1M per/sec option for users that sign a one-year contract.

❝ It makes sense to offer multiple access choices that allow carriers to expand the reach of their existing investment in frame relay. ❞

Michael Suby
Analyst, Stratecast Partners

Neither AT&T nor Sprint differentiates their services based on oversubscription rates.

"It makes sense to offer multiple access choices that allow carriers to expand the reach of their existing investment in frame relay," Stratecast's Suby says.

Although frame relay has been available for more than 10 years, the carriers still are reporting annual growth. While IP might be the future of all carrier networks, frame relay is still a dependable and reliable data service for business users. ■

Lucent

Farese says.

The impetus to formalize the partnership program was not only to grow that 4% figure, but to tap the full sales potential of products that Lucent has sold chiefly to service providers, says Mark Wilson, vice president of sales and marketing within the global business partner program. Demand for products such as Lucent's VitalSuite performance management software and OptiStar storage networking switch is building among companies, Wilson says.

"There's a bigger addressable market in the enterprise space," he says.

VitalSuite can tap into a $800 million worldwide market and give Concord Communications' network performance reporting software a run for its money, the Lucent officials say. OptiStar can address a $270 million Fibre Channel over IP SONET/synchronous digital hierarchy storage edge switch market led by Computer Network Technologies, the

company says.

Lucent's partner in attacking the enterprise storage market is McData. The telecom vendor also has partnerships with enterprise giants IBM and Sun for metropolitan optical, messaging and customer care sales opportunities.

Lucent even has an arrangement with Avaya to offer ATM connectivity for call center applications, an interesting turn of events, considering that Lucent jettisoned its enterprise operations years earlier in an effort to focus exclusively on the service provider market. That event gave birth to Avaya.

What goes around comes around, Ovum's Doherty says.

"That's this crazy world that we live in," he says. "We've come full circle. Nothing surprises me these days."

Lucent plans to expand the partnership strategy into the mobility, services and messaging markets next year, Farese says. This will add $300 million in revenue, making the global partnership program a $1 billion operation within Lucent, he says. ■

Looking Deeper, Running Stronger

An intelligent infrastructure **maximizes network uptime**, ensuring around-the-clock access and productivity.

When a network goes down, it doesn't go down alone. Productivity, profitability, and confidence fall right along with it. Professional and corporate reputations can get dragged down, too.

No wonder the majority of businesses that depend on networks depend on Cisco Systems. An intelligent network infrastructure based on Cisco switches and routers provides the highest levels of availability, so technical problems don't get in the way of business goals.

All Cisco switches and routers are designed to keep minor issues from turning into major ones. Redundant hardware designs, for instance, ensure that if one processor, supervisor engine, or power supply unexpectedly fails, another is there to take its place. Another example is inline power, which can be used to run IP phones and wireless access points, ensuring all lines of communication stay open in the event of a power outage. Additional features, such as hot-swappable line cards and network modules, make it possible to upgrade and repair devices without taking them out of service.

Several new features collectively known as Globally Resilient IP, or GRIP, were recently made available as a standard software upgrade. GRIP protects not only future productivity levels, but the value of past investments, dramatically improving the fault tolerance of existing networks.

And because Cisco switches and routers are bound together by Cisco IOS® Software, they strengthen and unify every segment of the network, from the enterprise access layer through the backbone to the outermost reaches of the WAN. A Cisco intelligent infrastructure also provides a wealth of information on the health of your critical business systems, identifying deteriorating conditions before they get out of hand.

The end result is a more reliable and manageable foundation for all your network-enabled applications. And when network availability goes up, it's a good bet productivity and profitability won't be far behind.

Intelligent networks increase availability and productivity

Cisco intelligent switches and routers offer multiple layers of redundancy and resiliency, enabling business networks to overcome unexpected failures, and even prevent problems from occurring in the first place. Cisco offers:

Reliable hardware designs: Redundant power supplies, fan trays, clocks, route processors, switch fabrics, and supervisor engines allow the network to recover from otherwise crippling failures without any disruption to network services. Passive backplanes with no active components simplify repairs and upgrades. Hot-swappable line cards and network modules allow changes to be made without taking a device out of service.

Cisco GRIP features: Building on past innovations such as Dial-on-Demand Routing and Hot Standby Router Protocol, new features such as Stateful Network Address Translation (NAT), Gateway Load-Balancing Protocol, and Cisco Nonstop Forwarding with Stateful Switchover minimize the impact of network failures, often rendering them imperceptible to users.

Spanning-Tree Protocol enhancements: Exclusive features such as Backbone Fast, UplinkFast, and PortFast decrease recovery times after failures; 802.1w Rapid Spanning-Tree Protocol accelerates the restoration of uplink connectivity; 802.1s Multiple Spanning-Tree Protocol enables load balancing and improves fault tolerance by providing multiple data forwarding paths.

Cisco support services: Network Availability Improvement Support (NAIS) includes availability assessments, benchmarking, and an improvement process to increase network availability and resiliency.

CISCO SYSTEMS

EYE ON THE CARRIERS

Johna Till Johnson

Good news about route management

Readers of this column might recall my repeated homilies — OK, you can call them rants — about the need for reducing operational costs in large networks.

Time for some good news: A new product category of "route managers" is poised to have an effect on the cost of operating large routed networks. Assuming the technology works as advertised, beneficiaries include service providers and large companies, which can reduce the amount of time required to configure, troubleshoot and manage IP networks. Oh, and these products will help make IP services more reliable and resilient. Can't get much better than that!

In a nutshell, the idea is that you drop a box (or boxes) into your network. By listening to the ongoing routing "conversations" in the network, these boxes quickly create a Layer 3 map of the network showing route locations. As the routes change, so does the image — letting you keep a real-time view of the network.

These products aim to alert you early to problems such as an increase in route flapping, which often presages a network outage. They provide real-time and retroactive root-cause analysis capabilities, letting users uncover and address the sources of current and past problems. They aid with scenario-impact analysis, letting you do what-ifs and capacity planning before making changes in your network. In short, they provide network engineers with something they haven't had before: the ability to visualize graphically what's going on in their networks.

Note that I'm not talking about router management, which generally focuses at looking at such things as queue depths and port availability. Nor am I referring to element management systems such as HP OpenView and others, which focus on tracking the health and availability of diverse network resources. Finally, these devices shouldn't be confused with so-called route optimizers, which pass traffic along different routes according to predetermined route selection criteria.

The breakthrough is that the devices provide, in essence, a router's-eye view of an IP network, both in real time and from a historical perspective. Oddly enough, such functionality has been missing since the dawn of the routing age. Even in the most sophisticated network operation centers at the largest companies, up-to-date route information all too often exists only in the minds of engineers or scribbled onto barely legible whiteboards.

All this translates into two things: cost savings and increased customer satisfaction. By making networks easier to troubleshoot, route managers save valuable engineering time. By making problems easier to avoid and recover from, they improve service-delivery metrics such as mean-time-to-repair, latency and uptime.

The catch? This technology is currently available only from a couple of start-ups — Packet Design and Ipsum Networks — so network executives might face a greater-than-usual challenge in introducing the technology into their networks. Packet Design is exhibiting this week at NetWorld+Interop in Las Vegas. Ipsum received a "new product achievement award" award in January at Comnet.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

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Short Takes

■ **Linksys** recently began shipping its **Wireless Dual Band A+G Router** and **A+G Access Point.** The products support wireless connections using 802.11b (2.4-GHz) and 802.11a (5-GHz), and the emerging 802.11g (2.4-GHz) standard, letting users connect an 802.11b or 802.11a network at a hot spot or corporate office, and an 802.11b or 802.11g network at home. The router costs $300; the access point, $280.

■ **Linksys** also recently began shipping gigabit switches for the desktop. Geared to small offices and homes that need to transfer large files (gaming, video, graphics), the **Gigabit 5–Port** and **8-Port Workgroup** switches each include automatic speed switching for 10M, 100M and 1000M bit/sec speeds. The five-port switch costs $150; the eight-port switch costs $200.

■ **Zone Labs** has announced **Integrity 2.2,** the company's centrally managed security product. Geared to securing employees' remote connections, Integrity 2.2 provides increased Check Point integration and failover support. The new version lets network administrators create security policies with specific conditional rules for network access at the file, registry key or memory process level. The new version offers a wider choice of firewall rules, including ports and protocol restrictions, and application-specific rules. Integrity 2.2 is slated to be released this summer.

■ Last week **SMC Networks** announced it will begin shipping its **Barricade DSL/Cable Broadband** routers with **Zone Labs ZoneAlarm Pro with Web Filtering.** ZoneAlarm adds a stateful packet inspection firewall that protects against hacker invasions and denial-of-service attacks, and URL and keyword Web site blocking. Users can control which applications communicate with the Web and quarantine suspicious e-mail attachments. Existing SMC users can download ZoneAlarm Pro's free 30-day trial.

Remote-office roundup
N+I offers something for every network executive.

■ BY TONI KISTNER

Now that we're all working from everywhere, network executives need to track technology up and down the scale.

It's not enough to be an expert in remote access, security and collaboration tools. Today, you're recommending and implementing small-office gear for home and branch offices, too. Small office/home office network vendors get it; that's why many are making a strong showing at this year's NetWorld+Interop. Here's a rundown of what's new.

Small to midsize offices

AEP Systems, which makes Secure Sockets Layer hardware security and acceleration gear, will announce a new version of SureWare A-Gate, an SSL-based VPN appliance for small to midsize offices. The device provides authenticated access to internal applications from Web-enabled devices. New in Version 1.2 is a remote desktop that lets users access Web-based applications such as Microsoft Outlook, Word and Excel. The device costs $5,000.

EmergeCore, which develops all-in-one network products, will announce a new version of its all-in-one network device, which it calls an "IT in a Box." The IT-100 includes 20G bytes of storage, router, four-port switch, firewall, VPN, Wi-Fi access point, FTP server, e-mail server and multiple-domain support.

EmergeCore says nontechnical user can set up and maintain the box via the Web-based interface. The device supports PCs; Macintosh and Unix machines; and laptops, Tablet PCs and PDAs. Unlike the previous version, which cost nearly $10,000, the new version costs $1,400.

Linksys, which Cisco acquired last month, will announce support for Wi-Fi Protected Access (WPA) in its wireless gear. WPA is a standards-based security protocol that eliminates most 802.11 security issues. WPA will be offered as a software download on Linksys' site.

Netgear, which will announced its IPO earlier this month, is distancing itself from Linksys and other SOHO network vendors by offering more "business-focused" products. Netgear will announce the ME103, an 802.11b access point with enterprise security and detachable antennas. The AP includes IP Security (IPSec) VPN pass-

EmergeCore's IT-100 all-in-one network device includes a router, four-port switch, firewall, VPN, Wi-Fi access point and more.

through, support for 802.11x for use with a Remote Authentication Dial-In Service server and support for a slew of enterprise authentication protocols, and WPA via a software upgrade. Available in May, the device will cost $240. The company also will debut the ANT2405 5dbi Omni-Directional Antenna ($30), the directional ANT24D18 patch Panel Antenna ($400), and the ANT24DBC DC Power Injector ($75), products that extend the range of wireless networks.

Netgear also debuted the FWAG114, a four-port router with built-in IPSec VPN, stateful packet inspection firewall, and 802.11a/g dual-band access point. The device supports two VPN tunnels. It is scheduled to be available in June and will cost $460.

Large offices

Aspelle will wait until after the show to announce an update to its SSL-based VPN, Aspelle Everywhere, next week. Although Aspelle won't provide all the details, it says the new version will include improved performance, intranet support, and portal functions to simplify user setup and management. Also new is multidomain support within Microsoft Active Directory and application-level authentication.

Application-level access lets network executives restrict access based on authentication type, which ensures the protection of sensitive data such as human resources or financial databases. Aspelle Everywhere provides access to all corporate applications, including Web, Unix, Windows and legacy systems. The new version is slated to be available in May at a price of $40,000 for 100 concurrent users.

Aventail, a leading SSL VPN service provider, will announce a partnership with the International Computer Security Association to create a set of SSL VPN certification criteria. At the show, many SSL VPN vendors are participating in the SSL VPN Hotspot, an area for educating attendees on the technology. Earlier this month at the RSA Security show, Aventail announced Pocket PC support, which will let users access corporate applications from their devices.

Neoteris will unveil Version 3.1 of its Instant Virtual Extranet SSL VPN appliance, and will announce a partnership with Serocom to offer the IVE as a managed service in the U.K. Version 3.1 includes a new Windows-based Secure Application Manager (SAM), that when coupled with the IVE's existing Java-based manager, supports all client/server applications. It also provides deeper integration with Oracle and Siebel platforms, with Citrix coming soon. Pricing for IVE 3.1 starts at $10,000.

Proxim, which bought Agere Systems last summer, will announce the Orinoco Gold 802.11a/b/g ComboCard, the first dual-mode card geared to corporations. The card, which lets users connect to any Wi-Fi network, comes in two versions. Gold ($130) includes a client utility that lets users manage and update their wireless network and security profiles. Silver ($110), which lacks the utility, is geared to less-mobile small office/home office workers. Like Linksys and others, Proxim plans to

Work wherever, however, whatever

I consider myself a mobile worker, but I really only work where I can get an Internet connection. That limits me to home, the occasional hot spot and hotels, where, by the way, there's still way too much dial-up. Wouldn't it be great to just … connect?

Gric Communications is working on it. The company, which has sold enterprise worldwide dial services for years, last summer released its MobileOffice service. At its core, MobileOffice is a hosted remote-access service with a bunch of partner-provided services. Applications include Gric Meeting, a Web meeting service using WebEx; GricSFA, a sales tool from UpShot; and Gric Expense & Time, a billing service by OpenAir. For security, Gric relies on Secure Sockets Layer, encryption and integration with existing VPN products.

Earlier this month, Gric debuted a managed VPN and firewall service, using technology from Blue Ridge Networks. Gric handles round-the-clock operation, and a management console provides network executives with the ability to push out security policies to individual users or groups.

Gric also is stepping up the types of access it offers. Gric's dial-up access business includes 20,000 points of presence in 150 countries. A while back, Gric debuted broadband service via Wi-Fi hot spots. Thus far, it has 1,200 access points in 14 countries; 68 airports in seven countries; seven convention centers in four countries and 485 hotels in six countries.

But what about home-based workers?

Earlier this month, Gric announced a new version of MobileOffice that includes cable and DSL provisioning for enterprise teleworkers through an unannounced aggregator-partner.

New management console features help IT managers enforce corporate security policies. For instance, a policy can be set that ensures remote workers always launch the VPN when accessing the corporate network or to kill the connection if the VPN tunnel is lost.

What's compelling about MobileOffice is that as Gric adds more applications, you don't pay extra. Of course, if you contract for the managed VPN or broadband services, you have to pay for that.

But otherwise, the service costs $25 per user, per month for 150 hours of dial-up usage and five hours of Wi-Fi. For more Wi-Fi time you can get the $40 package.

Users deal with a single interface, and IT managers deal with a single service for managing multiple connections. Users simply click on the client software and check off the connection method they need, whether it be broadband, dial-up or Wi-Fi. Using multiple services saves money.

"If I use DSL at home, and dial up and Wi-Fi while traveling, it costs me about $120 per month," says Bharat Davé, CEO of Gric. "But with the Gric bundled service, I'd save about 30% or more depending on usage."

What's next for Gric? Maybe a voice-over-IP application, Davé says.

"When I'm in Japan, I go crazy because my phones don't work because the standards are different. But I can always get a good IP data connection," he says. "Wouldn't it be great if I could put a little soft-phone connection in there and just dial out?"

It sure would be.

Kistner is managing editor of Net.Worker. She can be reached at tkistner@nww.com.

N+I

offer a WPA upgrade via software download when WPA is certified this week.

Ranch Networks debuted the RN5 Integrated Security Switch for securing small and branch offices. Ranch provides what it calls managed zones, which segment the LAN into multiple secured zones, each with specific stateful security policies for outgoing and incoming traffic. This lets network executives isolate incoming VPN traffic, isolate portions of the LAN, or limit access to the rest of the network from wireless LANs and conference rooms, for instance. The RN5 integrates five security zones, bandwidth management, autodiscovery and Layer 2 to 4 switching. The device costs $12,000.
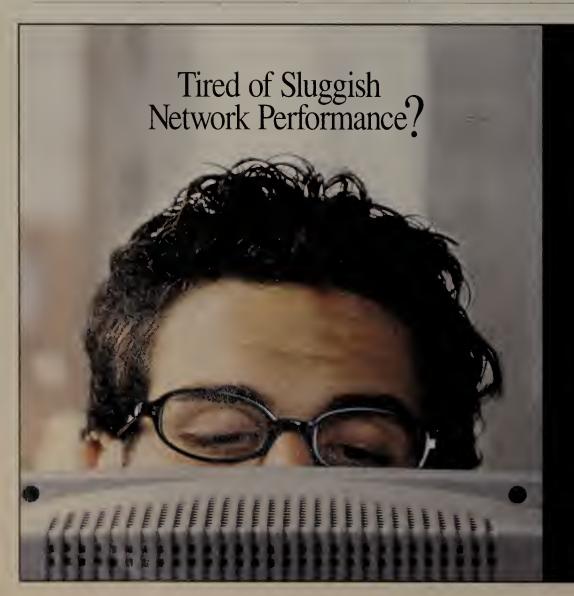
ServGate Technologies, which sells security gateways for home offices up to carriers, will announce the FlexForce Security Gateway. Geared to gigabit networks in branch offices, corporations and carriers, the device combines a VPN and firewall and can support WAN connections from 10M bit/sec to gigabit. The device can be partitioned into separate security zones called secure virtual gateways, each with its own management interface, policies and administrative controls. Pricing starts at $25,000.

Whale Communications will show off its new e-Gap Remote Access Appliance AE. The company differentiates its SSL VPN product from others by focusing on securing the location from which users are accessing corporate resources, such as airport kiosks. Whale's technology, called Attachment Wiper, deletes all temporary files, browser cache, downloaded files and pages, cookies, history information, user credentials and other information that the "untrusted" browser records during the SSL VPN session.

In addition, Whale provides a time-out mechanism that ensures sessions are closed when abandoned, and users who are legitimately working aren't logged off. A secure logoff replaces HTTP Basic Authentication, ensuring user credentials aren't cached to the client machine. The e-Gap also requires periodic reauthentication. E-Gap Remote Access Appliance costs $23,000. ∎

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Technology Update

GMPLS unifies network layers

■ BY JOHN STEWART

Carriers are seeking to gain efficiencies and develop advanced services by merging the worlds of IP and optical networking. However, first they need to overcome the extremely complex multilayer architecture that's been cobbled together to carry IP service over networks designed to support voice and fixed circuits. Ultimately, they need one control plane that extends from IP at Layer 3 right down to the optical transport level at Layer 1.

Generalized Multi-protocol Label Switching (GMPLS) aims to meet this need by extending network intelligence from the network edge through the core and back to the edge under a unified control plane.

A proposed IETF standard, GMPLS is still in development and isn't expected to be ready for wide-scale deployment for 1 to 2 years. But the technology isn't entirely new, because it builds on many of the gains that came through the development and standardization of Multi-protocol Label Switching (MPLS), which has simplified network architecture by replacing the need for ATM and frame relay equipment to oversee traffic engineering.
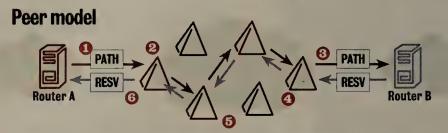
MPLS improves IP scalability and quality of service by creating virtual label-switched paths (LSP) across a network of label switching routers (LSR). GMPLS' primary enhancement to MPLS is its capability to establish connections at Layer 1.

GMPLS can be deployed in two ways: overlay model or peer model. In an overlay model, also called a UNI, the router is a client to the optical domain and interacts only with the directly adjacent optical node. In the overlay model, the actual physical light path is decided by the optical net-

work and not by the router.

In the peer model, the IP/MPLS layer operates as a full peer of the optical transmission layer. Specifically, the IP routers are able to determine the entire path of the connection, including through the optical devices.

The aim of GMPLS — both peer and overlay models — is to extends the reach of MPLS from routers through to the optical domain, where forwarding decisions are based on time slots, wavelengths or physical ports (called "implicit labels" in GMPLS terminology), not packet boundaries. GMPLS enables such cross-domain peering by supporting new classes of LSRs,

including dense wavelength division multiplexers, add/drop multiplexers and optical cross-connects.

The most significant aspect of GMPLS is the way it influences how labels are requested and distributed, bandwidth is allocated and network failures are communicated.

GMPLS uses Interior Gateway Protocol (IGP) extensions to support various link types — normal, nonpacket and forwarding adjacencies into the link-state database. If nodes at both ends of the link can receive and transmit packets, GMPLS identifies them as a normal link. If not, they

become a nonpacket link. If an LSR creates and maintains a label-switched path, it can announce the LSP into the IGP as a forwarding adjacency.

Crucial to this approach is GMPLS defining the hierarchy of LSPs. This lets the nesting of LSPs support the establishment of traffic trunks. The function is similar to MPLS' support for label stacking, in which many smaller LSPs can be aggregated into one larger LSP. GMPLS operates much the same as LSPs operate, which is as a virtual representation of physical paths.

Under the hierarchy GMPLS sets up, LSPs that begin and end with packet-switched nodes are at the bottom, followed in ascending order by those tied to TDM switching nodes, lamba switching nodes and fiber switching nodes.

GMPLS is expected to help service providers dynamically provision bandwidth and capacity, improve network restoration capabilities, and reduce operating expenses. New revenue-generating services such as optical VPNs also might spring from GMPLS. Another anticipated gain comes from GMPLS supporting open standards. This will let carriers use best-of-breed equipment as they build out their networks.

Demand for GMPLS should grow as IP traffic and services increases. Yet challenges remain. Vendors need to establish business cases that support GMPLS' introduction. And if companies are to gain maximum efficiency, they must overcome their own organizational roadblocks that separate optical transport and IP administrative domains.

Stewart is director of product strategy for Juniper. He can be reached at jstewart@ juniper.net.

■ **HOW IT WORKS**

GMPLS

Generalized Multi-protocol Label Switching can be deployed in two ways: through an overlay model or peer model. In a peer model, the router determines the physical route of a light path.

Peer model

1 Router A sends RSVP PATH message with explicit route to adjacent device in optical network.

2 Each optical network device listed in Router A's explicit route processes the PATH message and then passes it along to the next optical device listed in the explicit route.

3 Optical device adjacent to Router B processes PATH message and sends it on to Router B, the final hop in the explicit route.

4 Router B sends RESV message in response to PATH message, with explicit route to make RESV follow the same path.

5 Each optical device processes RESV.

6 The optical device adjacent to Router A processes RESV message and sends it to Router A. The result is a bidirectional light path between Router A and B, with the physical path being determined by Router A.

Ask Dr. Internet By Steve Blass

We are building a network similar to one you described in your April 14 column (www.nw fusion.com, DocFinder: 5567). We prefer the security of the private-line method to using frame relay to interconnect our LANs. Would a private-line network connecting three nodes with two spokes connected to a hub require us to install and configure an IP router at the hub site just to move traffic from one spoke node to the other? Or can we make the connection directly?

In a three-noded T-1 network, where one hub node is connected to two spoke nodes, you can terminate each T-1 on dual-channel CSUs with one port on each CSU feeding different ports on a router at the hub. This way, the through requirement for connecting Spoke 1 to Spoke 2 via connections to the hub site can be achieved by interconnecting the second port on each CSU with a crossover cable (as long as your routers and CSUs provide for defining the appropriate

channels for your T-1s). Adtran and Cisco make this relatively easy. Additional spoke nodes can be added, but they require additional CSU ports and/or routing facilities. Expandability is one of the attractions of using frame relay, or even Internet VPN networking.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@ changeatwork.com.
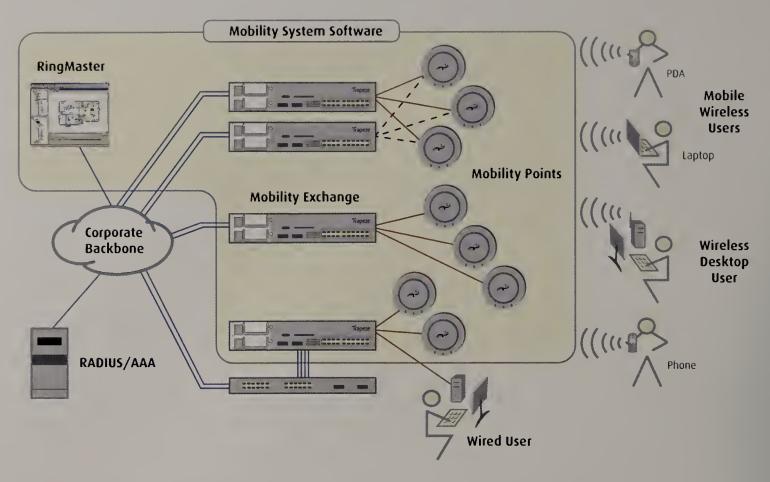
The Trapeze Networks™

Wireless LAN Mobility System™

Enterprise IT managers have good reasons to be wary of—and worried by—wireless LANs (WLANs). Truly revolutionary technologies tend to be disruptive, especially when they're randomly deployed by end users rather than rolled out enterprise-wide by IT professionals. The original PC networks are a perfect case in point. Once users sampled client-server computing, corporate-issue dumb terminals and their heavy-metal hosts were history. Unfortunately, end-user concerns rarely extend beyond their own workgroups and departments. Once their do-it-yourself deployments were up and running, IT was tasked with standard-izing, securing and stabilizing them—making sure the marketing LAN could communicate with sales, while preventing access to HR files. Still, it took years for IT to regain control of corporate technology initiatives.

Trapeze
NETWORKS

THE TRAPEZE NETWORKS MOBILITY SYSTEM

WLANs could well spark off an even more intense power struggle. Security concerns, integration issues and a shortage of pre- and post-deployment enterprise-class planning and management tools warn IT managers to proceed with caution. Users, meanwhile, aren't willing to wait.

The question isn't *if* or *when* wireless will come to the enterprise. It's already here. The real issue is who will control it. End users want the freedom to access apps and services without being tethered to an IP port.

IT managers, in contrast, can't lose sight of the big picture. They don't see a workable way to implement secure, scalable enterprise WLANs. The lack of effective tools for planning, deployment and management makes them understandably skittish. And "enterprise-class" WLAN vendors typically treat wireless as an add-on rather than an integral part of the enterprise. That may free end users to roam; it also gives IT managers two infrastructures to deal with: one wired, the other wireless. Given the severe budgetary and personnel restraints on today's IT departments, throwing twice as much work at them may simply burn out staff in half the time—to the detriment of both networks.

Trapeze Networks: Enterprise WLANs Done Right

Revolutionary challenges demand revolutionary solutions. That's precisely what Trapeze Networks provides with its Trapeze Mobility System, the first scalable WLAN infrastructure that offers seamless integration, secure mobility, and true enterprise-class planning, deployment and management tools.

The Trapeze Mobility System comprises four elements: the Mobility Exchange™ (MX™), Mobility Point™ (MP™), Mobility System Software™ and RingMaster™. For authentication, authorization and accounting (AAA), Trapeze is tightly coupled to a number of authentication servers, including Microsoft's Internet Authentication Server (IAS) and Funk Software's Steel-Belted RADIUS.

The Mobility Exchange represents a new class of networking devices that enables users' identities to follow them as they roam. The Mobility Point is closely integrated with the Mobility Exchange; together, they establish a distributed architecture that shares a systemwide control and data plane. The Mobility System Software, which runs on Mobility Exchanges and Mobility Points, seamlessly integrates the wireless and wired infrastructures. And RingMaster is a comprehensive suite of Java-based planning, deployment and management tools.

The Trapeze Mobility System fulfills the three fundamental requirements of an enterprise WLAN. First, it eliminates the distinction between wired and wireless infrastructures. Second, it furnishes a full suite of powerful, easy-to-use pre- and post-deployment planning and management tools. Finally, it enables end users to work wherever they choose without compromising enterprise security.

What's Wrong with This Picture?

To put the Trapeze Mobility System into perspective, consider just a few of the shortcomings of other WLAN offerings.

WLAN products are not enterprise-ready. Conventional access points (APs) are suited to workgroups or small SOHO sites. They support a small number of users and can't address enterprise-class security, scalability and management. Wireless appliances add a few features, but they require IT managers to become system integrators, installing and maintaining a complex assortment of point products.

Roaming reduces WLAN security. On wired networks, end users are supposed to stay in one place. Maintaining security depends on limiting mobility. Granting end users freedom of movement without sacrificing security means adding complex routing protocols to the backbone and installing software on all user clients—a costly, time-consuming task.

Planning and integration tools aren't up to the task. Current wireless design and configuration tools typically force IT managers to perform manual site surveys, trudging through buildings and manually measuring radio-frequency (RF) signals. That's far too labor-intensive for enterprise WLANs, which will require hundreds of APs. What's needed are tools that deliver the enterprise-wide view, enabling IT managers to plan and configure the WLAN before installing equipment (and without going for a hike) and then deploying everything with a click of the mouse.

Seamless Integration with Existing Infrastructure

Since the Trapeze Mobility System was built to seamlessly integrate wireless and wired infrastructures, it doesn't require IT managers to wrestle with workarounds, maintain separate networks or treat WLANs as second-class citizens. There's also no need to run complex network protocols like Mobile IP or add client software to accommodate wireless users. Air becomes just another medium, like optical fiber or unshielded twisted-pair wire.

Identity-Based Networking is central to seamless integration. It allows users to maintain the same set of access rights, virtual LAN (VLAN) and subnet memberships and other profiles and permissions whether they're on the wired or wireless LAN. Essentially, this means basing security and access control on user identity rather than physical ports, as traditional switches and routers do. Trapeze can even track multiple devices belonging to the same user—laptop, PDA and digital phone—an ability no wired network can match.

Secure Mobility

Identity-Based Networking is also used to ensure secure mobility. VLANs and subnet memberships follow users as they roam, keeping them on the same VLANs they joined on the wired network.

This is possible because the Trapeze Mobility System Software dynamically sets up and tears down VLANs over the airlink in real time. All the existing network engineering on the wired network such as roaming policies, encryption, access control lists (ACLs), class of service (CoS), quality of service (QoS) and routing policies are leveraged across the wired and wireless LAN.

Managing users according to identity is a proven practice based on the principles of AAA. The largest subscriber-based networks in the world, including AOL, also rely on AAA to implement user-based management and security. Network operating systems like Microsoft Windows 2000 server, as well as remote-access systems based on RADIUS, also fully support this approach.

It is the Trapeze Mobility System Software's unprecedented level of system intelligence and its ability to leverage the integrated data plane shared by the Mobility Exchange and the Mobility Point that enables it to dynamically create and tear down VLANs. This revolutionary approach ensures that roaming remains transparent to users and IT managers. There's no need for users to log on more than once or for IT to modify clients or the network backbone.

Compare Trapeze's transparency with the unwieldy approach offered by Mobile IP. The protocol initiates IP Security (IPsec) tunnels and performs network address translation (NAT) for every mobile user, changing addresses as users move. Because Trapeze employs a Layer 2 solution to deal with a Layer 2 issue—VLANs—there's no need to alter IP addresses, which makes troubleshooting easier.

IDENTITY-BASED NETWORKING: THE KEY TO SECURE MOBILITY

All wired network security is based on two premises: 1) users are physically connected to a switch or router port and 2) those users stay in one place. Even 802.1X and 802.11i expects wireless users to remain stationary. What's missing is mobility, the fundamental benefit of WLANs. But roaming rips holes in security schemes.

Trapeze's solution for secure mobility is based on Identity-Based Networking. Users' identities follow them. Users maintain the same VLAN membership, encryption, roaming policies and data path. IT can also track users with multiple devices. What's more, Identity-Based Networking is transparent to users and IT since users only log in once. There's no need to deploy new client software or add new protocols. No appliances are needed.

Early WLAN designers implemented secure mobility by assigning all wireless users to a single VLAN within a demilitarized zone (DMZ) and installing virtual private network (VPN) software on every wireless

client. That's a costly administrative nightmare. The Gartner Group estimates that it costs $250 every time IT has to touch a client PC. Designed for dial-up, using IPsec VPNs simply doesn't scale enterprise-wide.

With this approach, users had two identities and two sets of access rights—one when wired, the other for wireless. Since all wireless users are on a single VLAN, they all have the same rights and permissions, from the CEO to the receptionist. A single VLAN doesn't scale, so as more users get on the WLAN, the broadcast domain breaks down.

Another workaround is to use Mobile IP, along with NAT and IPsec VPNs. Mobile IP means changes to all the edge routers and either client Mobile IP software or APs running a proxy Mobile IP client. Since so few IT managers are willing to deploy new client software, the proxy approach is favored. And since Mobile IP is a routing protocol, those APs become "ceiling routers." Additionally, processor-intensive Mobile IP software could mean expensive router

upgrades. Relying on NAT to change the client's IP addresses as users roam, Mobile IP makes troubleshooting more difficult as maintaining a large-scale NAT implementation is extremely complex.

Recently, some vendors are using the SSID to create multiple wireless VLANs. SSID supports a limited number of VLANs, and each one must be created at every AP that IT anticipates users will employ. Thus, all VLANs must be configured everywhere, which means significant configuration changes to switches and routers.

Finally, there's the appliance approach to secure mobility, which forces IT to become system integrators. In this scenario, IT managers end up overseeing a network of VPN appliances that aren't integrated with the underlying WLAN. Appliances also aren't air-aware, which severely limits their ability to detect and locate rogues.

Equally impressive, Trapeze maintains multiple broadcast domains, while isolating one from another. Thus it supports all VLANs defined on the wired network across its WLAN without creating any limitations. That's a vast improvement over wireless schemes that create VLANs via service set identifiers (SSIDs), which severely limit the number of VLANs and restrict end users' ability to roam.

	Mobile IP	Service Set Identifier (SSID) per VLAN	AAA-Based
End-user Configuration	Special client software or client proxy	Must configure the right SSID; SSIDs are hidden	Only one SSID to pick
Enforced VLAN Membership	Yes, based on IP address	No, SSID is user selectable	Yes, based on user authorization
Backbone Impact	Very large; new protocol on edge routers	Large; push all 802.1Q VLANs down to APs	None; connect mobility switch to backbone; mobility switches tunnel
Scaling	No deployments since inception (1995)	Unproven	Proven to millions; example: ADL
Overhead	Tunnel per user; route table entry per user; IP address consumption	Every VLAN everywhere; hidden SSIDs	Optimized AAA (EAP processing; roamed AAA)

COMPARING SECURE MOBILITY APPROACHES

HALT, WHO GOES THERE?

Just because users *can* roam doesn't mean they should be allowed to roam everywhere. IT may want to limit mobility for security reasons or to conserve bandwidth. Using the Trapeze RingMaster tool suite, administrators define mobility profiles that indicate where users can and can't go. For instance, IT may not want visitors to roam outside of conference areas, while giving employees the run of the building. RingMaster defines mobility profiles based on user, group or domain.

Additionally, RingMaster and Identity-Based Networking take authorization to a new level of granularity: User-based ACLs. Typically, routers use ACLs to govern device access rights. User-based ACLs, in contrast, further focus mobility profiles; for example, IT could grant guests Internet access but prevent them from reaching internal resources.

Trapeze helps IT managers severely limit, if not completely eliminate, rogue attacks. Only authenticated users can communicate over the network and all communications over the air is encrypted. What's more, Trapeze eliminates the drudgery associated with rogue detection, which typically requires IT personnel to walk the floor performing manual RF checks, a hit-or-miss proposition at best. Instead, RingMaster performs an RF sweep, mapping the network RF topology and coverage. From there, IT managers can authenticate unknown users or investigate further if a rogue is suspected.
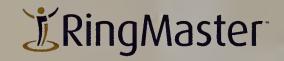
When RingMaster performs an RF sweep, it listens to all channels, not just those the Mobility Points are using to carry production traffic. Some rogue detection schemes listen only for beacons, but savvy hackers can easily turn off beaconing on rogue APs when they're trying to penetrate network defenses. Finally, Trapeze doesn't deploy "sensor" Mobility Points, which only listen for rogues without carrying production traffic. Every part of the Trapeze Mobility System pulls its weight.

Trapeze's Identity-Based Networking also gives IT help-desks a big hand. When users on wired networks open a trouble ticket, tech support typically asks for the number of their network port. WLANs don't have network ports, and there's no way for users to know which Mobility Point they're on. No problem. All the help desk has to ask is "What's your user name?" If the answer is "Bob," then RingMaster is queried, "Where's Bob?" It not only locates him but also pulls up a complete history of where he has roamed, where he was authenticated and how much bandwidth he has consumed.

Intelligent Planning and Management

VIRTUAL SITE SURVEYS YIELD REAL RESULTS

As indicated, Trapeze significantly simplifies WLAN planning, deployment and management. For example, there's no need to perform a manual predeployment site survey. Instead, an IT manager works with RingMaster's easy-to-use interface to perform automated virtual site surveys, capacity and RF planning, and offline configurations.

RingMaster

The process begins by importing building floor plans in standard file types, such as AutoCAD, JPEGs and GIFs. RingMaster's wizard then prompts the IT manager for the information needed to establish coverage areas, including the size of departmental offices, labs and conference rooms.

RINGMASTER TOPOLOGY MAPPING ALLOWS IT TO VERIFY PLANNED RF COVERAGE IN DESIGNATED AREAS SUCH AS MARKETING AND ENGINEERING.
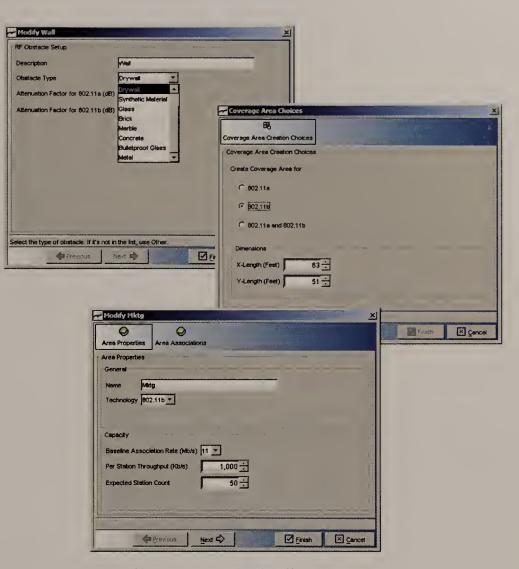
Next, RingMaster asks for other metrics, such as the number of users and how much bandwidth their applications require. The IT manager may decide that each member of the 50-person marketing group gets 1 Mbps, while the 200 users in manufacturing receive 500 Kbps apiece. Once the WLAN design is approved, RingMaster generates installation drawings and work orders displaying the location and the number of Mobility Points that need to be deployed.

When IT is ready to deploy the WLAN, RingMaster automatically pushes all configurations out to the Mobility Exchanges and Mobility Points—with one click of the mouse. Post-deployment, it also verifies RF coverage, maps network topology and automatically distributes traffic to optimize performance. Running standalone or integrated into Hewlett-Packard's OpenView management framework, RingMaster keeps tabs on systemwide faults and events and collects and graphs performance statistics.

Early on, IT managers paid close attention to WLAN RF coverage—which is something like optimizing a wired network according to cable length. Capacity is a far more important design consideration.

LOSING THE SIGNAL

With RF, it's critical to consider how building layouts and physical objects will affect signal loss. Walls, windows and cubicles absorb RF signals at different rates. Different walls, in fact, exhibit different signal-loss characteristics. To address these discrepancies, RingMaster includes a library of attenuation factors to help calculate signal loss.

IT MANAGERS CAN USE RINGMASTER TO RUN OFFLINE WHAT-IF SCENARIOS WITH VARYING BANDWIDTH, DISTANCE AND ATTENUATION FACTORS TO HELP WITH CAPACITY PLANNING. FOR INSTANCE, RINGMASTER CAN QUICKLY DETERMINE HOW MANY MORE MOBILITY POINTS WOULD BE NEEDED TO DELIVER 1 MBPS TO EACH USER IN MANUFACTURING, RATHER THAN 500 KBPS PER USER. RINGMASTER ALSO RAPIDLY MODELS HOW DEPLOYMENTS WILL DIFFER USING 802.11A OR 802.11B. ALL CALCULATIONS ARE PERFORMED IN REAL TIME.

DESIGNING WLANS: CAPACITY NOT COVERAGE

Designing an enterprise WLAN to deliver sufficient capacity may seem counterintuitive at first, since most pilot or workgroup WLANs stress RF coverage. In the enterprise, however, the challenge is not how far the RF signal can travel but how to deliver enough bandwidth to meet the demands of business applications. In short, plan for optimal capacity and complete coverage will automatically follow.

Some key design principles include:

Coverage and Data Rate. Data rate is a function of distance, so the farther a user is from the access point, the weaker the signal and the lower the throughput.

DATA	RATE	INDOOR RADIUS
802.11b	11 Mbps	100 feet
802.11a	36 Mbps	75 feet

WLAN architects may want to set 5.5 Mbps as the lowest allowable association rate for an 802.11b network, so that if the signal quality drops below that threshold, the user is forced to associate with a new Mobility Point. One end user associated at 1 Mbps will slow down the entire cell, since it will take longer for the Mobility Point to communicate with that user.

User Density and Cell Size. The number of users and the applications they are running will in large part determine the amount of bandwidth requirements, which will in turn decide optimal cell size. In a large office or if user density is high, system architects will employ a higher data rate and smaller cells to increase throughput. Figure 1 shows how smaller cells reflect the user's experience.

Considering Application Bandwidth. A good rule of thumb on an 802.11a network is to allow for 2 Mbps downstream and 2 Mbps upstream, which roughly replicates user experience on a wired LAN. It's critical to remember that WLANs are a shared rather than a switched medium. For an 802.11b network, allow 500 Kbps in each direction. This will deliver a user experience similar to a broadband DSL connection.

FIGURE 1: SMALLER CELLS DELIVER MORE THROUGHPUT

11 MBPS PEAK RATE
3 MOBILITY POINTS PER
17 MBPS TOTAL THROUGHPUT

In addition, RingMaster centralizes the configuration process by maintaining one systemwide image of all Mobility Exchanges and Mobility Points it uses to automatically assign power levels and RF channels. IT managers can easily clone these images; if a new Mobility Point is added, RingMaster automatically recalculates the channel assignments and power levels of all affected Mobility Points.

Further, RingMaster's RF sweeps enable it to superimpose the actual RF topology onto the original WLAN design. Because the RF environment constantly changes, this real-time feature is critical for troubleshooting and for air awareness.

The Trapeze Mobility System also supports third-party APs. It stores their IP addresses to establish a centralized management point and records their RF assignments in order to optimize channel allocations for nearby Trapeze equipment. Once the WLAN is up and running, the system automatically excludes these sanctioned third-party APs from its list of rogues and verifies their RF coverage areas during RF sweeps.

Finally, RingMaster can detect pockets of congestion by mapping which users are associated with a specific Mobility Point. If traffic is especially heavy, users will automatically be associated with a less utilized Mobility Point. These real-time reassignments are possible because RingMaster configures the Mobility Exchange and Mobility Point, while the Mobility Exchange controls the Mobility Point's 802.11 associations and power level.

Mobility Exchange and Mobility Point

The Mobility Exchange is the industry's most advanced wireless networking device. As discussed, it's aware of user identities, enabling it to track them on the go. The Mobility System Software keeps the Mobility Exchanges and Mobility Points informed about user data paths, ACLs and services, which makes possible seamless integration and secure mobility.

Sharing an integrated control and data plane, the Mobility Exchanges and Mobility Points are built to scale enterprise-wide. Since Mobility Points are mounted in unsecured locations—like ceilings and walls—intelligence is concentrated in the Mobility Exchanges, which are situated in secure wiring closets. In fact, the Mobility Point is incapable of taking any action, until the Mobility Exchange tells it to.

While the industry debate over thin vs. fat APs rages on, the Trapeze Mobility Point can be best described as "fit." It is a secure radio with enough processing power to handle tasks that should be performed near end users, like encrypting messages and collecting RF and performance statistics. But it doesn't have a console port, a command-line interface (CLI) or a local store of user names and passwords or other confidential information. Thus, if a Mobility Point is stolen or hacked, it presents no threat.

What's more, if the radio in a Mobility Point goes bad, a new one can be swapped in easily. The Mobility Point then automatically downloads its configuration from the Mobility Exchange. So-called fat APs, in contrast, retain IP addresses and client authentication data, which make them inherent security risks. If they're hacked, it could precipitate a crisis.

Some vendors of fat APs argue these devices should run Layer 3 protocols like Mobile IP. That would turn an already vulnerable AP into an unsecured ceiling router. Equally troubling, as soon as a fat AP powers up, both authorized and unauthorized user devices try to associate with it (known as the "bug light" effect). Once users are associated with a fat AP, they're stuck with it—even if a closer AP powers up a minute later.

Trapeze Mobility Points support multiple types of authentication and encryption, including dynamic Wired Equivalent Privacy (WEP) with rotating broadcast/multicast keys, Wi-Fi Protected Access (WPA), Temporal Key Integrity Protocol (TKIP) and Advanced Encryption Standard (AES). WPA is the de facto standard for 802.1X and TKIP until 802.11i encryption is finalized. AES is a new cryptography algorithm from the U.S. government that will replace the Triple Data Encryption Standard (3DES).

Mobility Points can be purchased either with one radio that is software-selectable for 802.11a or 802.11b or with dual radios that support both 802.11a and 802.11b. When 802.11g is ratified, it will be supported as well. The Mobility Point also has integrated dual-band omni-directional antennas that operate at 2.4 GHz and 5 GHz. Its two 10/100 Mbps PoE ports ensure a fully redundant dual-homed data path and transparent failover.

THE THREE 'Rs': REDUNDANCY, REDUNDANCY, REDUNDANCY

The importance of fault tolerance in a WLAN edge device can't be overestimated. A 20-port Mobility Exchange can easily service 200 users, which makes redundancy and resiliency even more critical than they are for wired edge devices. Trapeze's protection mechanisms include redundant load-sharing power supplies, redundant load-sharing gigabit uplinks, redundant Mobility Point connections for dual-homing to PoE ports, and redundancy protocols like Spanning Tree, Per VLAN Spanning Tree (PVST+) and even Cisco's proprietary port fast.

IT managers can set QoS or CoS policies, guaranteeing specific performance levels for different groups of users. Like all other policies, QoS profiles follow users no matter where they roam. Similarly, IT administrators can deploy delay-sensitive apps to a WLAN by defining ACLs and priority queues. RingMaster also features templates that help set roaming and QoS policies, among others.

How an enterprise WLAN handles the IEEE 802.1X authentication process is very important. If all authentication activities—such as managing encryption keys—take place at a central authentication server, that server can quickly become a bottleneck. IT would then be forced to deploy and manage multiple authentication servers. Trapeze's Mobility Exchange offloads the AAA server by handling EAP processing, session consolidation, encryption, key management and, certificate and key generation locally.

Taming the Wireless Tigers

Trapeze Networks delivers an integrated Mobility System that meets the demands of today's enterprise. For starters, Trapeze's comprehensive RingMaster tool suite takes the pain out of planning, deploying and managing WLANs.

Trapeze also tackles and solves the biggest challenge of WLANs—secure mobility. With its innovative Identity-Based Networking, Trapeze allows users to roam effortlessly while guaranteeing that permissions and attributes travel with them, whether they're working wired or wireless. What's more, Identity-Based Networking detects rogue implementations and unauthorized users, further reducing the risks associated with WLANs.

Finally, by taking a revolutionary approach to a revolutionary technology, Trapeze erases the distinctions between wired and wireless networks. The Trapeze Mobility System integrates seamlessly with the existing network infrastructure, without forcing IT managers to waste weeks installing new client software or adding network protocols. For the first time, IT managers can build one network that serves all users equally well. Trapeze is wireless done right.

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of the Trapeze WLAN Book at
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Trapeze
NETWORKS

L-CI-NWW-304

GEARHEAD
INSIDE THE
NETWORK
MACHINE
Mark
Gibbs

Registry trivia and tools

Shameless Plug Department: We have discussed spam many times and our alter ego has banged on about it in Backspin to the point where our esteemed editor has threatened physical violence if another spam column is presented. If you are fighting spam you might be interested in the free seminar, "Blocking Spam: Stop Unwanted Content Enterprisewide," that I am presenting with Network World (for more on the event go to www.nwfusion. com, DocFinder: 5641).

We continue our registry exploration. Reader Greg Martin wrote "Regedt32 is needed to modify security. Regedit cannot do so." Quite true, under Windows NT and 2000 there are two versions of the registry editor: regedt32.exe and regedit.exe (under Windows 98 and ME there is only regedit.exe to entertain you).

There are a few differences between the two utilities: regedt32.exe has a security menu to examine and edit permissions of subtrees, keys and subkeys; each hive is dis-

played in its own dedicated window; you can set an option to work in read-only mode; you can edit values longer than 256 characters as well as edit REG_MULTI_SZ entry values; and you can load multiple registry files at the same time.

On the other hand, regedit.exe has a better search facility; all the keys are visible in one window (like Explorer), subkeys can be bookmarked, it opens the last subtree edited, the registry can be exported to a text file, and you can import a .REG file from the command line.

Under Windows XP you can launch regedt32.exe or regedit.exe — either way, you get the same program, which combines some of the features of both editors and leaves out others. For example, there is no multiwindow display but you can edit permissions.

Reader Mark Mills recommends Aelita's ER Disk, which he describes as a "great tool for backing up all the PC's registries on a network, creating ERD CD-ROMs, or remotely fixing a user's registry without his intervention." (For details go to DocFinder: 5634.) Not content with one recommendation, Mills also suggests, "For those who just like to back up their registries in one or two clicks, or defrag [their] registry, try Erunt — yes it is freeware! [DocFinder: 5635]."

Erunt is definitely cool, and the program's

author, Lars Hederer, makes an interesting observation: "The Export registry function in Regedit is useless to make a complete backup of the registry. Neither does it export the whole registry (for example, no information from the Security hive is saved), nor can the exported file be used later to replace the current registry with the old one. Instead, if you reimport the file, it is merged with the current registry, leaving you with an absolute mess of old and new registry keys."

The registry defrag that Mills mentioned is done by a freeware program included with Erunt called Ntregopt, which works under Win NT/2000/XP. He suggests using Ntregopt regularly, especially after installing or uninstalling a program.

Hederer says Ntregopt works by "recreating each registry hive 'from scratch,' thus removing any slack space that may be left from previously modified or deleted keys," but it "does not change the contents of the registry in any way, nor does it defrag the registry files 'on-disk' (as the PageDefrag program from SysInternals does). The optimization done by Ntrgopt is simply compacting the registry hives to the minimum size possible."

This leads us to PageDefrag. Written by Mark Russinovich for Win NT 4.0, 2000 and XP, PageDefrag (DocFinder: 5636), another

freeware utility, can defragment files that are open for exclusive access by the operating system. This includes paging files and Registry hives.

Russinovich says "Paging and Registry file fragmentation can be one of the leading causes of performance degradation related to file fragmentation in a system," and never was a truer word spoken. Or written.

You need to explore Russinovich's site, SysInternals (DocFinder: 5637) — he and his partner, Bryce Cogswell, offer scores of freeware utilities that are priceless for diagnosing and exploring the gory details of all versions of Windows.

You might want to check out another of SysInternals tool called Regmon (DocFinder: 5638). Regmon runs on Win 95, 98, Me, NT, 2000, XP and .Net Server, and is designed to monitor and display all Registry activity in real time. You can filter and search for keys and data so you can analyze how Windows and applications use the registry. You will be surprised at how busy the registry is.

If you want to learn something obscure and potentially useful about the registry, check out SysInternals story on hidden registry keys (DocFinder: 5639).

Expose your keys at gearhead@gibbs. com.

Cool Tools | Two Palms now, with one on the way

Quick
takes
on high-
tech
toys

Palm last week announced the new consumer-focused Palm Zire 71 handheld that comes with an MP3 player, video player and embedded digital camera; and the Tungsten C, a "professional" version that finally includes embedded 802.11b wireless LAN connectivity.

The Zire 71 is available for $300; the Tungsten C will begin shipping next month for about $500.

We were lucky enough to receive the Zire 71, and have been playing around with it for a few weeks. We also received a Tungsten W, the Palm device that includes a cell phone with wireless WAN connectivity via General Packet Radio Service (GPRS) (over the

AT&T Wireless network).

The Zire 71 runs on the new Palm OS 5 operating system, and features 16 bytes of memory, a 144-MHz ARM-based processor and a 320-by-320-pixel color screen. The coolest feature is the embedded camera. To take a photo, a user slides out the bottom of the Zire to reveal the shutter button (the lens is on the back). The Zire's screen then acts like a viewfinder. When the user presses the shutter button, the PDA makes a "shutter click" sound to indicate the photo was taken. This sound can be turned off if a

The Palm Zire 71 slides to reveal an embedded digital camera.

user wants to go into "spy mode." One thing we noticed was that after the shutter sounded, our photo subject tended to move, which caused a blurry photo (the image itself is recorded after the shutter sound, for some reason). Turning off the sound might give you better photos.

The photos are taken in 640-by-480-pixel VGA resolution, and lower resolutions (320 by 240, or 160 by 120) are also available. These resolutions make the photos good for e-mailing or posting on Web sites. For larger prints, these resolutions might be too low. At the highest resolutions, we could get almost 160 photos stored on the device (A counter tells you how many you have left). Photos then can be synchronized back to the desktop for editing and e-mailing.

Other features of the Zire 71 include the RealOne Player for digital audio files, and the Kimona player for video files. Videos and music can be stored only on the SecureDigital expansion card — they can't be stored on the PDA itself. We were given a 64M-byte card — we'd recommend a 128M-byte card if you want to store lots of music, videos or both. The PDA has an external speaker, or you can attach headphones.

The Tungsten W is a converged device (PDA plus phone), with a little bit of BlackBerry (e-mail device with embedded keyboard) thrown in. The Tungsten W features 16M bytes of memory, a Dragonball VZ processor (33-MHz), and a 320-by-320

color display. To use the phone, a user connects a hands-free headset to the device, although a third-party company provides a case that lets a user hold the Tungsten W to his ear as if it were a cell phone.

While we like the idea of the Tungsten W (WAN connectivity, a phone and embedded keyboard), we think the network connections are still too slow — Web surfing is a lesson in patience (GPRS only provides about 40K to 60K bytes of data throughput).

Similarly, the embedded keyboard was nice for typing long notes and e-mails, but the feel of the keyboard was not as nice as a BlackBerry. The e-mail connectivity out of the box is for point-of-presence or Internet Message Access Protocol e-mail accounts, not for corporate e-mail such as Lotus Notes or Microsoft Exchange. To get that connection, you'll need to look at a third-party application or get your IT group to help out.

The Tungsten C (which we've only seen, and haven't played with yet) promises a quick, three-step connection process to a WLAN. With a faster wireless link, you finally get a good Web-surfing experience on a PDA, something that has been missing with previous PDAs we've tried. The Tungsten C also provides the embedded keypad, which helps with longer notes and e-mail.

Shaw can be reached at kshaw@nww. com.

Using your browser for security

How's this for a nightmare scenario: The CEO or CFO gets his hands on a Web-based network vulnerability assessment tool he can use from the browser on his desk to make sure you have everything properly buckled down.

Philippe Courtot, chairman and CEO of Qualys, trots that out as a scare tactic, essentially saying his tool is so easy to use that you better install it to find the weak spots before the top cheese does.

He's half joking, of course, but with new data security regulations coming online and increased boardroom pressure for security compliance, it's clear that companies can no longer simply rely on annual security checkups.

Qualys, founded in 1999, is attacking the problem with a service it calls On-Demand Network Security. The basic idea, Courtot says, is to assess network vulnerability without requiring customers to install and learn new tools.

The company has 65 network scanners in the U.S., Europe and Asia that it uses to map customer networks from the outside, looking to see what firewall ports are open, or servers are available, etc. Once complete, the baseline is used to generate reports detailing what has been added or changed.

Then the company scans for weak spots, looking for evidence of 2,500 vulnerabilities the company has profiled in a database. About 20 to 30 new vulnerabilities are added each week, Courtot says.

When problems are identified, the service alerts the customer and outlines the potential exposure. For remediation, Qualys finds or develops fixes, subjects both to an internal QA process and then makes them available for download.

Customers who want to complement the outside scan with an inside view receive a packaged scanner that, once clamped on the network, is authenticated by Qualys and provides a pipeline in. The box is owned and managed by Qualys, but all information gathered by either type of scan is kept encrypted and is visible only to the customer.

One shortcoming of the Qualys approach is that customers can't scan desktops for banned programs, say FTP. Courtot says he might add that capability by introducing client code.

On-Demand costs roughly $50,000 per year for customers with a Class C IP license, and the company says it has 1,000 subscribers, including the Federal Reserve Bank.

One interesting insight is that Courtot says customers are averaging 22 scans per year. That says something about pent-up fear out there.

— John Dix
Editor In Chief
jdix@nww.com

opinions!

History lesson

Regarding "Users eye Windows mgmt. plan" (www.nwfusion.com, DocFinder: 5624): Does anyone have any sense of history these days? Unfortunately, I lived through the promulgation of SNA and the Open Systems Interconnection model for network management — which I'm sure everyone would agree were raging successes.

Now Microsoft is going to cure its own ills. If Microsoft built an operating system that worked properly, perhaps it wouldn't need so much management. I'll grant that hardware, operating systems and networking have changed greatly over the past 20 years. The same systems management problems persist, regardless.

Chuck Waser
Raleigh, N.C.

Numbers game

I found the story "What users want from SLM software" (DocFinder: 5625) very incisive, but I have an issue with the market size figure quoted ($6.9 billion). This looks like a total for the entire network and systems management space rather than service-level management, which is known to be generally in the $400 million to $600 million range. Understanding users' needs has to start with defining and having a common understanding of what constitutes service-level management.

Michael Odusami
London

Risky business

The story "Early Wi-Fi gear may prove risky investment" (DocFinder: 5626) is right on the money. My

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

company implemented the Sierra Wireless card before realizing that there was an issue connecting with Citrix. Sierra then informed me that it developed a fix but that Verizon still was testing it. The Sierra card is useless to my company.

David Sirrine
IS coordinator
The Bouma Corporation
Grand Rapids, Mich.

Lovin' Linux

As someone whose organization began moving to Linux and BSD four years ago, I found Mark Gibbs' Backspin column "Linux loved, but Windows wins" (DocFinder: 5627) interesting.

Linux and open source should not be seen as an all-or-none proposition. This type of mindset creates a sense of despair. The smart approach to Linux is to take small steps. This requires serious thought about what Linux can and cannot do for a company.

It is no secret that Microsoft architectures are designed to lock you into a dependence on Microsoft technology. If a company feels trapped by Microsoft, then to a large extent it should blame itself for letting itself be trapped.
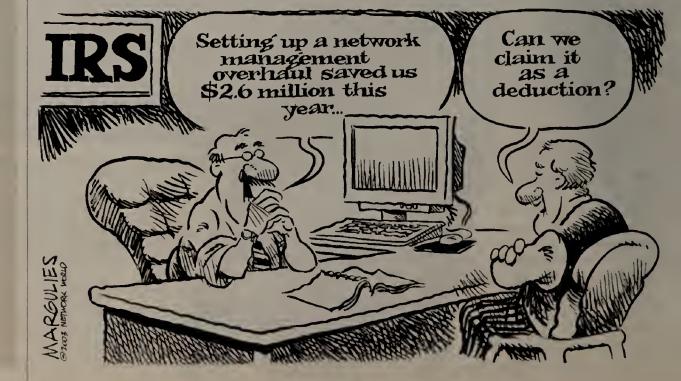
Perhaps my organization is lucky. We lost the financial ability to keep up with the Microsoft churn cycle. We had to move to something else. Did it take hard work? Sure. Did it require some risk? Absolutely. Was there some frustration along the way? You bet. If we could do it again, would we? In a second.

The trick is to look at Linux strategically. It is far easier to implement Linux in the server farm first — fewer systems to convert, can be done seamlessly, has direct benefits for IT and users. We continue to use Windows where appropriate.

Nate Keegan
Network engineer
City of Prescott
Prescott, Ariz.

More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 5623**

IRS

Setting up a network management overhaul saved us $2.6 million this year...

Can we claim it as a deduction?

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USER VIEW
Chuck Yoke

The Zen of technology acquisition

One of the main tenets of Buddhism is mindfulness — the ability to be totally aware of the moment. Adherents of all branches of Buddhism meditate daily to train their minds to have "clear comprehension" and see things objectively and impartially.

After 20 years of involvement in IT, I can safely say that mindfulness has not been an inherent trait of most IT organizations. Sadly, from many perspectives, it can be said that "mindlessness" has been a better description of IT.

Many costly strategic decisions have been made based totally on technology prejudices, zealous preferences or knee-jerk reactions, without analyzing the true business impact. Many companies have wasted a good deal of time, resources and money on IT projects based solely on technology. Data warehouses have been built that today sit idle with data that hasn't been updated in years. Costly ATM campus networks have been implemented, only to be ripped out before they are fully depreciated and replaced with Gigabit Ethernet. Expensive CRM systems have been implemented that are rarely used because of their complexity and high support costs.

Unfortunately, we haven't learned from these mistakes. Companies still make knee-jerk IT decisions without analyzing the overall finances, risks and business impact. With the current need for companies to focus on ROI, it is even more crucial that IT decisions be made objectively and impartially.

An example is VPNs. VPNs can lower network costs for many companies, but they are not a panacea. Being Internet-based, VPNs cannot offer the same availability, redundancy and quality of service that dedicated connections provide. So while VPNs might be acceptable for small branch offices, they probably are not the best choice for situations requiring mission-critical connectivity — yet companies are rushing to replace their dedicated WAN links with lower-cost VPNs. Instead of being mindful of the business impact in terms of extended mean time to repair, degradation of network performance, lower user productivity and potential lost revenue, they are blinded by the lower cost and make a knee-jerk decision.

Along with avoiding knee-jerk cost-cutting decisions, IT personnel need to guard against making zealous technology-based decisions. It is easy to be blinded by a technology's technical elegance. IT departments need to be impartial in their analysis to understand where a technology will fit and where it will not. A technology's only value is in the need it will meet. If the need is not there, the technology — no matter how elegant — has no value.

To be viewed as a valued business partner, IT organizations need to make decisions objectively and impartially, be mindful of all risks and business impacts, and ensure that their strategies focus on business value. Now excuse me as I go meditate.

Yoke is a business solutions engineer for a corporate network in Denver. He can be reached at ckyoke@yahoo.com.

> **Many costly strategic decisions have been made based totally on technology prejudices, zealous preferences or knee-jerk reactions.**

CACHE ADVANCE
Linda Musthaler

Certifications are worth it

Every year, *Certification Magazine* conducts a survey to determine the effect of technical certifications on an IT professional's salary and career. During the economic boom, certified professionals could boast of huge salary gains that were higher than their noncertified colleagues. Salary disparities between the "haves" and "have nots" often reached 20% and more. It was easy to say, then, that attaining a technical certification was worth the time, cost and effort.

But what about today? The economy has soured, IT spending has slowed to a crawl, and many IT professionals have experienced or witnessed massive layoffs. Those who have been laid off are having trouble finding jobs. Is there still any value in getting a technical certification?

The answer is a resounding yes, according to the nearly 10,000 people who responded to *Certification's* 2002 survey. Despite the gloomy economic news and flat IT spending throughout 2002, certified professionals still had good things to say about the value of being certified. Nearly 80% of the survey respondents plan to pursue additional certifications during the current year.

They are doing so primarily for job security. These people — your peers — believe that certification plays an important role in keeping their jobs in these uncertain economic times. And not only do they feel more confident about maintaining their jobs, they also feel more confident about performing their jobs. Certifications verify your skills and knowledge for analyzing, designing, installing and supporting complex computing environments, and employers take notice.

Some employers even make certification training a formal step in their workforce development programs. This is sound reasoning on the employer's part; the *Certification* survey points out that employees feel that technical certification improves their problem-solving skills and overall job productivity.

But you don't get certified just to be more productive. You're in it for the money! Well, there's good news on that front as well.

Even though the tough economy has slowed the pace of raises and promotions, holding at least one technical certification increases your prospects of a better raise or promotion. Of the 2002 survey respondents, 31% received a job promotion within a year of attaining their primary technical certification. I interpret this as a sign that employers appreciate the increased knowledge, broader range of skills, and enhanced confidence and productivity that accompany the attainment of a certification.

Even if you don't see a promotion after getting certified, you at least can anticipate earning more money. Nearly half of the survey respondents reported receiving a raise within a year of attaining the certification. You might say that those raises were slated to occur anyway, even without the certification. Not so, say the respondents. Most of them believe their raises were mostly attributable to their certification.

OK, so promotions and more money are good. But what else can you expect from getting certified?

Well, there's the respect of your colleagues, customers and peers. More than half of the survey respondents believe they get more on-the-job respect because of their technical certifications.

There's also the attention from your key computer vendors, particularly if they are the ones that have issued the certifications. Cisco, HP, IBM, Microsoft, Novell and Oracle, among others, issue well-respected technical certifications. If you make the effort to complete their certification programs, they treat you better than they do the average guy off the street. The special treatment usually includes access to pre-announcement product information such as road maps and strategies; offers for discounted equipment, training and services; in-depth technical information and tools that help you perform your job better; and access to priority support. It all adds up to helping you be a better technical professional.

So times are tough and training money is scarce, but there's still value in attaining technical certification. Whether you're getting your first certification or you're adding on to an already-impressive resumé, certification makes you more attractive as an employee. It's a classic "win-win" situation for you and your employer.

Musthaler is vice president of Currid & Company, a technology assessment firm in Houston. She can be reached at linda@currid.com.

> **So times are tough and training money is scarce, but there's still value in attaining technical certification.**

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River STONE NETWORKS

Bandwidth with Brains

Network-attached storage (NAS):
Nearly as simple (NAS) as it looks.

By Deni Connor

You're running out of space on your servers. Appeals to users to free up disk space aren't working. You don't need to install a storage-area network because you're only working with file-oriented, not block-level transaction-based, data. A single-purpose network-attached storage appliance is the answer. NAS appliances are easy to install because they attach directly to the network via an Ethernet connection. The box becomes the focal point for file access, with users' requests for files bypassing the server, improving bandwidth and eliminating bottlenecks. Some issues to look for when buying NAS appliances are scalability, cost, back-up capability, reliability and compatibility with your server operating system (see Buyer's Guide chart at www.nwfusion.com, DocFinder: 5630).

Analysts divide NAS into three areas based on scalability and cost: entry-level, with up to 300G bytes of capacity; midrange, from 300G bytes to as much as 1.2 terabytes; and enterprise, high-end, which exceeds 1.2 terabytes. The entry-level and midrange NAS market is characterized most often today by Windows-powered NAS appliances (see review, page 58) — file servers that have a version of Microsoft Windows embedded as their operating system. The advantages of Windows-powered NAS appliances are that they fit into Windows-based networks because they use the Windows Management Interface that network servers do, and they often can be managed with Active Directory tools.

The remainder of the midrange market consists of NAS appliances that use embedded Linux, FreeBSD or proprietary operating systems that use a variety of file access protocols (see review, page 56). The advantage to the user is that these NAS appliances can use the protocols found in your network.

If, for example, your network primarily consists of Windows-based servers, you'll want to choose a NAS appliance that supports Common Internet File System, a Microsoft-devised file access protocol. If you have Unix, NetWare or Macintosh servers in your network, you'll want the capability to use Network File System, NetWare Core Protocol, HTTP, FTP or AppleTalk Filing Protocol.

High-end storage, characterized by NAS appliances from Network Appliance and EMC, often have a series of more robust features such as fault tolerance; snapshot backup; replication of data between sites; and hot-swappable drives, power supplies and fans. While being more expensive than entry-level and midrange arrays, the performance of high-end storage arrays is becoming sufficient for running mission-critical applications such as databases and online transaction processing applications.

The future of NAS is the notion of managing NAS as it proliferates across the global enterprise.

"NAS file services and systems are hot because they address an isolated silo approach that can be consolidated," says Jamie Gruener, a senior analyst with The Yankee Group. "The challenge is how fast can you migrate and move files from one place to another and how quickly can you manage multiple NAS appliances. You look at distributed file services and systems to do that."

Established companies such as Veritas Software and start-ups such as iSilon, Scale8, Sistina Software, Spinnaker Systems and Z-force all are playing in this new segment of the NAS market. The software or hardware these companies make camp on top of traditional NAS and let a number of geographically separated NAS appliances be managed and accessed as a single device, thus streamlining operations and eliminating the latency problems of accessing distributed NAS.

Open source NAS appliances

Built for the price-conscious, these NAS appliances lack some features, particularly in management.

By Kenneth Percy
and Randall
Birdsall, Network
World Test Alliance

O pen source enthusiasts, particularly Linux advocates, make much of the inherent systemic and cost efficiencies of Unix operating systems. To ascertain how the beauties of an open source operating system are brought to bear in departmental network-attached storage appliances, we invited makers of these products into our labs.

Consistent with the notion that you get what you pay for, these products are less than stellar as a group, particularly with regard to management. Also, the best product was also far and away the most expensive. But from among the three vendors that submitted their products, Snap Appliance's Snap Server 14000 performed well enough across our criteria to win the Network World Blue Ribbon Award. The two other systems tested were StorTrends 2104 from American Megatrends (AMI) and FIA's POPnetserver 4600. We evaluated the NAS appliances in four categories: ease of installation, hardware configuration/ features, management and performance.

■ Snap Appliance

You can argue that Snap's strong showing reflects its considerable experience as a NAS appliance vendor. But the model we tested, the Linux-based Snap Server 14000, is considerably more expensive than its two competitors. A standard Snap Server 14000, with 1G byte of RAM and 12 120G-byte drives, costs $16,000. An AMI StorTrends 2104 with 512M bytes of RAM and no drives

is priced at $2,300; and FIA's POPnetserver 4672 with 512M bytes of RAM and four 180G-byte drives is priced at $3,500.

Installation was easy thanks to an effective install wizard. Snap's Quick Install guide was the best we've seen — this installation wizard was the only one that prompted for a change of the default password. Our only complaint was the need for frequent reboots throughout the process.

Redundancy features abound, including RAID 5 with hot spare; hot swappable drives; and redundant power, fans, and Ethernet interfaces with load balancing capabilities. It also offers two integrated software features: ETrust Antivirus software from Computer Associates, and its own Integrated Backup Express, software that lets up to five Snap servers back up to a sin-

Snap Appliance's Snap Server 14000 earns top grade for consistent performance.

gle tape device. When testing features, however, the process of administering snapshots was unnecessarily difficult, and the documentation failed to address our questions.

Snap Server's management application, Administration Tool, was easy to use but had some shortcomings. Logs give you a lot of information, but they're difficult to understand and cannot be exported as data files. Also, no real-time statistics were available on Administration Tool, nor did it offer any diagnostic capability.

These last two complaints can be addressed by accessing Snap Server's command-line console via a Secure Shell-encrypted connection. This gives considerably more visibility into the box, including a large number of real-time statistics. It also is the only means of accessing simple IP diagnostic tools such as ping and trace route.

The strength of this product is its performance (see performance chart, page 58). With a maximum throughput of 1.83M byte/sec, performance in the file server client emulation testing was marginally better than the others. During Web server emulation testing, however, the Snap product distanced itself quite a bit, posting a maximum throughput of just less than 21M byte/sec. However, Snap's resilience to denial-of-service (DoS) attacks was unimpressive, incurring a 17% performance hit while under attack. (See online chart, www.nwfusion.com, DocFinder: 5646.)

■ FIA

Installing FIA's POPnetserver 4600 was very nearly a plug-and-play exercise. Just a few clicks through FIA's setup wizard, and you have instant storage.
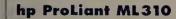
But there are a couple of caveats that prospective FIA buyers should beware of. Our testers complained the automated setup process bypassed any initial user setup, and "Guest" accounts were left with read and write access to the default directory — a considerable security oversight.

Secondly, FIA customers who lose or forget the administrative password must ship their POPnetserver back to

■ Net Results

2.0 RATING

**AMI StorTrends 2104
(Version 2.0)**

Company: American Megatrends Inc., (770) 246-8600, www.ami.com **Price:** $2,300 (one processor, 512 MB RAM, no drives) **Pros:** Unique management capabilities; strong reporting. **Cons:** No redundancies; weak performance.

3.0 RATING

**FIA POPnetserver 4672
(Version 2.0)**

Company: FIA, (949) 940-6500, www.fiainc.com **Price:** $3,500 (one processor, 512 MB RAM, 4x180 GB drives) **Pros:** Extremely easy setup; High DOS resilience. **Cons:** Limited reporting, statistics, and diagnostics; no console access.

3.7 RATING

**Snap Server 14000
(Version 2.2)**

Company: Snap Appliance, (408) 879-7800, www.snapappliance.com **Price:** $16,000 (one processor, 1GB RAM, 12x120 GB drives) **Pros:** Best performer; multiple hardware redundancies. **Cons:** Expensive; no real-time statistics.

What's the score?

	StorTrends 2104	POPnetserver 4672	Snap Server 14000
Management 30%	2	2	3
Performance 30%	2	3	4
Configuration/Features 25%	2	3	4
Ease of installation 15%	2	5	4
TOTAL SCORE	2	3	3.7

BLUE RIBBON WINNER

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence) **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected **1:** Consistently subpar, or lacking features being reviewed.

Open source NAS

the dealer for installation, and, astonishingly, all data on the server will be lost.
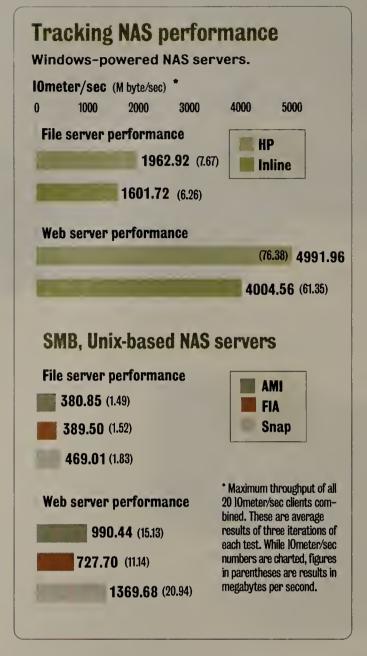
FIA runs its NAS product on FreeBSD. The POPnetserver 4600 supports RAID 5 plus hot spare, a RAID configuration that reserves an additional hard drive to swap in immediately when a drive fails. Other redundancies include hot-swappable drives and load-sharing Ethernet interface cards. However, volumes cannot be expanded on FIA's device without resetting it.

FIA boxes can provide full-featured back-up functionality, but at a price. FIA offers POPbackup, Data Replicator, Snapshot Backup and Server-to-Server Replicator as optional, extra-priced software. Our testers found that each of these products worked as advertised and were easy to use. Missing from FIA's repertoire, however, is antivirus software.

Through the POPmanage browser-based application, management of the POPnetserver 4600's is fairly straightforward. We cited the logs for offering a lot of data clearly.

The holes in FIA's overall management capabilities are statistics that offer only a handful of items that can be monitored, and there are no IP troubleshooting or diagnostic capabilities. Logs can be exported, there are no other reports to be had, and FIA's is the only device under review that does not protect its management access to the NAS via Secure Sockets Layer-encrypted communications. Perhaps most egregiously, FIA has no console port through which you can access the box when all else fails.

The performance of the FIA NAS appliance also was wanting, registering 1.52M byte/sec maximum throughput in the file server scenario; and just more than 11M byte/sec in the Web client emulation, the lowest metrics of all systems tested. However, FIA scored higher in performance than it otherwise would as the result of its exceptional resilience to DoS attacks, with performance

Tracking NAS performance
Windows-powered NAS servers.

IOmeter/sec (M byte/sec) *

| 0 | 1000 | 2000 | 3000 | 4000 | 5000 |

File server performance

HP
Inline

1962.92 (7.67)

1601.72 (6.26)

Web server performance

(76.38) 4991.96

4004.56 (61.35)

SMB, Unix-based NAS servers

File server performance

AMI
FIA
Snap

380.85 (1.49)

389.50 (1.52)

469.01 (1.83)

Web server performance

990.44 (15.13)

727.70 (11.14)

1369.68 (20.94)

* Maximum throughput of all 20 IOmeter/sec clients combined. These are average results of three iterations of each test. While IOmeter/sec numbers are charted, figures in parentheses are results in megabytes per second.

degrading only 4% while under a DoS attack.

■ American Megatrends

AMI's StorTrends 2104, which runs on Linux, is particularly geared toward price-conscious buyers. While AMI achieved this goal, it did so at the expense of some important attributes, such as effective management,

redundancy features and performance.

Installing the StorTrends 2104 is difficult. There's no installation utility, and the Quick Start documentation was not particularly useful. The set-up console was menu-driven, but there was no guidance offered, including Help. To make matters more difficult, some software bugs impaired our engineers' ability to deploy the box incident-free.

The configuration of the 1U appliance gives buyers some value for the dollar. Despite its low price, the StorTrends 2104 supports the most powerful processor of the Unix systems tested (Pentium 4/2.4 GHz), and the most system memory (up to 3G bytes). However, it is missing some important redundancy features, such as hot-swappable drives and redundant Ethernet interfaces. While it likely was done to keep down the cost, storage devices as a rule should give a little more consideration to disaster-proofing.

StorTrends 2104 offers a single power supply, a single fan and no network connection fail-over functionality. Moreover, there is no redundant or hot-swappable drive capability, and administrators are forced to reset the box after expanding a volume or adding a disk drive.

AMI's browser-based management interface, SRM Express Management, is a clean, well-organized application that promises to be an effective tool. But like many aspects of the StorTrends 2104, it's not quite there yet. SRM Express includes a network topology map, real-time utilization graphs and some robust reporting functionality.

However, there were two serious flaws. AMI's logs cannot be sorted or filtered, and they're difficult to understand. Second, AMI's Snapshot implementation doesn't allow automatic scheduling. Snapshot software, an important value-add for NAS products, makes instantaneous, point-in-time copies of the system's file directory at configured intervals that can be used to retrieve corrupted or wrongfully deleted files.

Still more bad news concerning AMI's showing is that it does not support antivirus software, nor does it offer or support any software for performing full backups of its drive contents. Finally, AMI's performance test results did little to distinguish the product.

Percy is a technology analyst and Birdsall is a senior test engineer for Miercom, a network consultancy in Princeton Junction, N.J. They can be reached at kpercy@miercom.com and rbirdsall@miercom.com.

Midrange Windows-powered NAS devices

HP's StorageWorks takes top honors for performance.

By Kenneth Percy and Randall Birdsall, Network World Test Alliance

Microsoft's release of its Windows 2002 Server Appliance Kit two years ago let traditional server vendors such as Dell, HP and IBM enter the network-attached storage appliance market, which had been dominated by Auspex, EMC and Network Appliance. Today, Windows-powered NAS devices have about a 25% share of this market, according to IDC.

We invited all vendors with Windows SAK-based products to participate in a comparative review — including Dell, IBM and Iomega — only HP and Inline were game to play. The Network World Blue Ribbon Award goes to HP's StorageWorks NAS b2000 primarily on the strength of its performance. Inline, with its FileStorm 4550, sported some innovative features but came up short when otherwise compared. We evaluated the appliances in four categories: ease of installation and management, hardware configuration, features, and performance.

■ Setup

StorageWorks NAS b2000 uses a ProLiant DL380 server

platform, which builds on HP's experience as a server manufacturer. Take, for example, HP's RapidLaunch utility. It provided prompt-driven installation that resulted in quick deployment and management access to the box.

RapidLaunch requires no Dynamic Host Configuration Protocol server access to set up the NAS. It discovered all network-attached elements and assigned an appropriate IP address to the NAS. Our only complaint was that the default administrative username and password were nowhere to be found on "Quick Start Guide" documentation, an annoyance that HP promised to fix in its next release note.

Conversely, installing the Inline device was a journey of

discovery. There was no utility offered for initial installation, and the "Quick Install Guide" was insufficient for the task. We were eventually successful, only with heavy reliance on the main user manual.

■ NAS-SAN integration

Two configuration characteristics that separated these two systems both favored Inline. An Inline FileStorm 4550 can contain up to 8G bytes of system memory, as opposed to HP's 6G bytes. Also, Inline supports up to a maximum of four processors, while HP supports only two.

Networked Storage Offers Cure for Backup Ills

Sony StorStation™ family of network-attached storage solutions brings backup efficiency and consolidation to organizations of any size.

Many organizations are finding that tape backup systems installed years ago can't keep up with the new business requirements of today. The problems range from having older tape formats with insufficient capacity to dealing with collections of individual tape drives that require significant IT attention to ensure that backups run on schedule. If your backup tasks are growing out of control, there's a good chance that Sony's family of StorStation networked backup solutions can bring consolidation and efficiency to your backup processes.

For some organizations, increasing backup operational efficiency can be as simple as upgrading to higher capacity tape drives, such as Sony's Advanced Intelligent Tape™ (AIT) family of reliable data protection solutions. For others, it may mean adding automation, such as tape libraries that automatically manage media cassettes and back up on a scheduled basis. But for more and more organizations, increased efficiency is better achieved by adding dedicated network storage solutions to their networked environment in order to consolidate backup tasks, ensure greater efficiency, and reduce backup management and maintenance requirements.

Network-attached storage (NAS) devices, such as those in the Sony StorStation product family, enable organizations to increase efficiency by consolidating multiple backup devices or disk storage devices onto existing Ethernet networks. NAS devices act as centralized backup coordinators that can be configured in a number of ways to suit many business requirements. In the simplest configuration, a NAS server provides shared files or shared network storage for multiple servers. With the proper integrated software, NAS file servers can act as networked caching devices, providing speedy access to frequently used data. And for organizations with a range of network backup or archival requirements, a NAS backup server can route data to an attached tape library, enabling organizations to keep up with increasing backup demands by merely adding additional or higher capacity tape drives. Combining a NAS device with one or more tape libraries brings increased data protection and offers a cost-effective solution for long-term near-line or offline storage.

In addition to increased efficiency and consolidation, automated networked backup solutions can ensure backups are performed on schedule, with limited or no human intervention. The combination of a NAS server and a tape library is a particularly good solution for scenarios such as:

● Centralized backup for remote locations or branch offices that lack on-site IT support;

● Businesses that have outgrown their existing tape capacities;

● Cost-effective disaster recovery for businesses that have many store locations, such as retailers; and

● Departments with multiple servers and growing data requirements.

In the past, it has been cost-prohibitive or too complex for many organizations to deploy networked devices to address such scenarios, but Sony's family of networked backup solutions changes the cost equation. Sony offers two types of NAS solutions: Sony StorStation™ Backup Servers and Sony Stor-Station™ NAS File Servers.
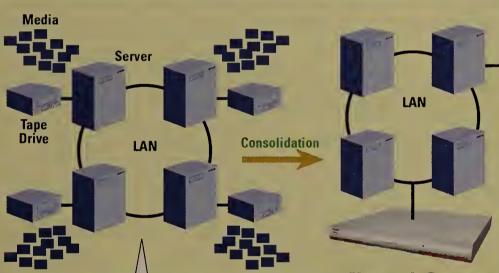
Sony's StorStation™ Backup Servers combine Sony's high-performance Advanced Intelligent Tape (AIT) library with a NAS file server and a leading pre-integrated backup management software solution. The "NAS head" provides network connectivity and backup management, while the StorStation™ AIT library provides the backup capacity, automation and media handling. For environments with growing data protection and archival requirements across multiple application, database or production systems, the StorStation™ Backup Server solution provides a single point for backup consolidation. Moving from a server-attached backup

strategy to a networked solution brings cost and efficiency benefits by eliminating the duplicate resources, efforts and equipment required to back up individual servers separately. As the number of servers or the amount of data generated grows, the cost-benefits of a networked backup approach increase.

The Sony StorStation™ Backup Server, when used with a Sony tape library, is ideal not only for consolidating backups on-site, but also as a component of an overall backup strategy for companies needing to back up or archive data from satellite or branch offices. The StorStation™ Backup Server, when used with a Sony tape library, delivers the capability needed to achieve an unattended backup of several days or even several weeks, depending on the amount of data to be protected. In addition, it can be managed remotely simply by connecting it to

the headquarters office via a wide-area network.

Sony's StorStation™ NAS File Servers provide a low-cost solution for data storage consolidation, file serving and file sharing capabilities for small and midsize businesses and enterprise departments. Sony StorStation™ NAS servers are an ideal complement to Sony AIT tape libraries. For organizations with a range of file sharing or network storage requirements, Sony provides NAS server configurations that provide 330 GB to 720 GB of networked storage.

For ease of use and flexible access, Sony file servers feature browser-based management and file sharing support for Windows®, Unix®, Linux®, Novell® and Macintosh® operating systems. Data protection is achieved by RAID-5, RAID-1 and RAID-0 options. For an extra level of data protection of the consolidated data, Sony AIT libraries can be combined with the StorStation file servers via a SCSI port. Connectivity into industry-standard networks is provided by Gigabit Ethernet or dual 10/100 Ethernet ports.

Consolidating and Simplifying Backup and Storage

Challenges
● Drive or library attached directly to server
● Each system's backup must be handled separately
● As the number of systems grows, backup management becomes cumbersome and difficult

Backup Consolidation
Backup appliance sits on the network

Benefits:
● Automated and streamlined backup management
● More manageable growth and scalability
● Turnkey solution with pre-packaged backup management software

Network Storage Consolidation Benefits:
● File sharing
● Storage consolidation
● Centralized management and growth

Sony's StorStation™ NAS backup servers and file servers integrate the best of high-end enterprise storage functionality into solutions that are affordable, easy to use and easy to manage. Whether for remote office, workgroup or data center deployments, all StorStation™ NAS devices are compact, 1U high, rack-mountable units designed to fit neatly into areas where space is limited.

If your business is struggling to manage multiple tape drives spread across your network, or if you need to consolidate your data and make it easily accessible to your networked clients, the time is right for Sony's Network Solutions—the smart investment.

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Windows-powered NAS

But perhaps the most important difference between the two products lies in their architectures. HP's device is an off-the-shelf ProLiant DL380 server running Windows SAK. It is a self-contained storage unit with SCSI connectivity for expansion cabinets that can accommodate up to 27 terabytes.

The FileStorm 4550, however, is essentially a head-end device with no internal storage resources, except for what is required for storing the operating system. The device contains the intelligence to provide connectivity and file services to users, but storage resources are external only. This could be in the form of a SCSI-based expansion cabinet or a Fibre Channel storage-area network (SAN).

Serving as a NAS head for a SAN, the FileStorm 4550 can present the storage resources of a back-end SAN as if they were local on the NAS appliance. As tested, the Inline system is a two-chassis solution. Along with the FileStorm 4550 NAS head, storage was situated on an Inline TruFibre expansion cabinet, which was accessed via a Fibre Channel link.

Another hardware aspect of the Inline box is the operating system on the FileStorm 4550 that was stored on solid-state disks (SSD), which are available on the Inline product as an optional item. With SSDs, data is stored on erasable programmable read-only memory rather than on conventional, magnetic disks. With no moving parts, SSDs are significantly faster than conventional disks, but they're also significantly more expensive.

Even without SSDs, an Inline 4550 is not inexpensive. Configured with two Xeon processors, 4G bytes of RAM, two Fibre Channel host bus adapters, and no internal drives, it costs $28,200. An HP StorageWorks NAS b2000 with one processor, 1G byte of RAM, two, 36G-byte drives

for internal storage use, and three 146G-byte drives for client storage use is priced at $8,000.

Hardware redundancy is solid for both products with both featuring hot-swappable disks, N+1 power supplies, multiple redundant fans, and dual, load-balancing Ethernet network interface cards (NIC). HP also features hot spare memory and memory mirroring. Inline adds cache mirroring on redundant disk controllers.

■ Features
Inline made a strong showing in the features category. TruMask is software that enables logical unit numbers (LUN) masking on an Inline storage cabinet. LUNs are essentially resource target addresses. LUN masking is a security feature that makes user-defined

HP's StorageWorks NAS b2000 scored big performance numbers in our tests.

target resources invisible to specific Fibre Channel-connected computers.

TruMap is a virtual-LAN-like feature that maps storage resources to specific physical ports. Access to those resources, then, would be available only to requests entering through that port.

Finally, TruCache lets redundant disk controllers mirror one another, providing instantaneous failover in the event of disk controller failure.

HP's most notable software feature is StorageWorks' NAS Data Copy software, which lets data be replicated over an IP network to a redundant StorageWorks box. If a link or system fails, users request failover to the redundant NAS, and fail back when the primary is restored.

HP's Integrated Lights Out (ILO) is a feature of the underlying ProLiant DL380 server platform. Embedding

the ILO software on a dedicated processor, complete with its own Web server, allows browser-based terminal emulation of the StorageWorks console in the event of connectivity loss or system malfunction.

■ Windows management
To manage a Windows SAK-based NAS is to manage a Windows 2000 Server. There are server management utilities that Windows does well, such as Performance Monitor and Event Viewer. The problem is that to access these handy management utilities or manage the appliance's hardware, administrators must have physical access to the NAS or launch a Terminal Services session with the server. Windows SAK platforms prohibit the ability to develop their own management applications that integrate all NAS management functions — and even multiple NAS devices — into a single interface.

Browsering into both products gave us the same interface. But HP's well-known server utilities made managing their offering a better experience. One example was called Survey Utility. This provided a lengthy, well-organized log of all administrative changes — hardware and software — performed on the NAS.

Also, Windows SAK-based systems leave the onus of RAID array management to the vendors. HP's Array Configuration Utility made RAID-related tasks — such as creating and defining an array or adding disks — a simple exercise. By contrast, Inline's MorStorView was not intuitive and required much getting used to.

■ Performance
Each vendor provided a product populated with four internal drives and as much memory and processing power as needed for optimal performance. HP tested with two Intel Xeon 2.8-GHz processors and 1G byte of RAM. Inline submitted product with four Intel Xeon MP 2.0-GHz processors and 1G byte of RAM.

To ensure that each product's disk subsystem was stressed equally, our test engineers baselined each product's I/O cache capacity and then adjusted the traffic loads to send 30% more load than the system's cache could handle (see How we did it, www.nwfusion.com, DocFinder: 5632).

HP's StorageWorks outperformed the Inline FileStorm product in all performance categories, registering an average of 7.67M byte/sec throughput when we ran our file server client emulations against it and an impressive average of 76.38M byte/sec with Web server requests. Inline posted 6.26M byte/sec and 61.35M byte/sec, respectively (see Performance chart, page 58).

Additionally, HP's resilience to off-the-shelf denial-of-service (DoS) attacks was impressive. The product proved impervious to our attacks despite multiple attempts. Conversely, Inline's performance degraded by 26% during a DoS attack. (See online chart, DocFinder: 5646.)

The interfaces attacked in HP and Inline's cases were Alacritech network interface cards, but this has no bearing on the results of the DoS attacks, according to Alacritech engineers. The reason our DoS attacks affected Inline was because it performed RAID control in software, while HP's RAID control is hardware-based.

HP StorageWorks NAS b2000 and Inline FileStorm 4550 approach the delivery of NAS functionality to enterprise customers differently. Inline's less conventional approach, however, did not translate into performance advantages over HP's plain old NAS server.

Percy is a technology analyst and Birdsall is a senior test engineer for Miercom, a network consultancy in Princeton Junction, N.J. They can be reached at kpercy@miercom.com and rbirdsall@miercom.com.

■ Net Results

4.2 RATING
Storage Works NAS b2000 3.0
Company: HP, (650) 857-1501 **Price:** $8,000 (one processor, 1G byte RAM, 3x146G-byte drives). **Pros:** Best performance; excellent utility applications. **Cons:** Weak feature support.

3.95 RATING
Inline FileStorm 4550 1.3
Company: Inline, (703) 421-8100, www.inlinecorp.com **Price:** $28,200 (two processors, 4G bytes of RAM, no drives). **Pros:** Rich features; integrated Fibre Channel support. **Cons:** Software-based RAID; unintuitive RAID management.

What's the score?

	Storage Works NAS b2000	FileStorm 4550
Performance 40%	5	4
Ease of installation and management 25%	4	3
Features 20%	3	5
Configuration 15%	4	4
TOTAL SCORE	4.2	3.95

BLUE RIBBON WINNER

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence) **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected **1:** Consistently subpar, or lacking features being reviewed.

HOT
Companies to watch

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InteropNet
Labs

iLabs engineers cook up
802.1X, iSCSI, MPLS tests

The NetWorld+Interop 2003 InteropNet Labs — a neutral proving ground for vendors to publicly test their products in accordance with emerging standards —

will focus on three areas this week in Las Vegas: 802.1X-based wireless security; iSCSI-based storage networks; and advanced internetworking based on Multi-protocol Label Switching.

Weeks ago in a warehouse halfway between San José and San Francisco, dozens of iLabs volunteers set up a network and conducted rounds of interoperability testing. Then the iLabs team packaged up the network and shipped it to Las Vegas, where show attendees can get hands-on experience.

As media sponsor of the iLabs, *Network World* had exclusive access to the inner workings of the hot stage testing. We sent Network World Global Test Alliance member Joel Snyder and director Christine Burns to California to participate in the testing and report the findings.

Wireless security is rising, but it's not fully baked yet

802.1X authentication passes most iLabs tests.

■ BY JOEL SNYDER, NETWORK WORLD GLOBAL TEST ALLIANCE

BELMONT, CALIF. — In interoperability testing that NetWorld+Interop's iLabs Wireless Security team conducted earlier this month, we found that products supporting 802.1X — the proposed standard for authentication in wireless networks — worked well together most of the time, but we identified some problem areas that need attention from standards bodies and vendors alike.

The iLabs team assembled 802.1X supplicants (clients) from four vendors on four operating systems (Windows XP, Windows 2000, Mac OS X and Windows CE): Remote Authentication Dial-In User Service (RADIUS) authentication servers from seven vendors running on Windows, Linux and HP/UX; and 19 different 802.1X wireless and wired devices including access points, new wireless switches and traditional wired Fast Ethernet switches.

Across the board, we identified hundreds of test cases that worked flawlessly. However, testing uncovered instances where interoperability wasn't so smooth, including complications with Protected Extensible Authentication Protocol (PEAP) and Tunneled Transport Layer Security (TTLS) authentication within 802.1X, setting of wired equivalent privacy (WEP) keys, and interpretations of the standards.

Vendors achieved excellent Transport Layer Security (TLS) authentication rates in our lab setting, with only a few test cases failing. TLS, and IETF-sponsored protocol, is the simplest acceptable authentication method for wireless networks, and has been accepted as a standard, therefore it served as a litmus test for basic operation.

But in the real world, things are much different. TLS requires that each end user have a dig

What can iSCSI do for you?

■ BY CHRISTINE BURNS

iLabs team shows off remote boot, video-feed capabilities.

We know what iSCSI is — a protocol that defines how devices move block-level storage data over IP links.

We recognize the potential benefit — an opportunity to extend access to storage over existing Ethernet networks.

We know it has big-time backers — Adaptec, Alacritech, Cisco, Emulex, HP, IBM, Intel, Microsoft, Nishan Systems and Network Appliance, to name some. But what can iSCSI do for you?

How about letting you go to CompUSA, buy three USB floppy disk drives, hang them off a Linux server and configure them into a RAID array from a Windows 2000 Server over a wireless network?

Of course, no one would build a RAID array with 1.44M byte floppy disks, but the iLabs team exercise showed that many things are possible with iSCSI. "It does go to demonstrate that iSCSI gives you the flexibility to build any real-life storage application you need and then run it over IP," says Allen Gwinn, iLabs IP Storage Initiative team lead and senior director of technology at the Cox School of Business at Southern Methodist University in Dallas.

The iLabs team then backed up a local disk drive on a Win 2000 Server equipped with an iSCSI-supported Alacritech network interface card to another drive located on a "just a bunch of disks" box across a Gigabit Ethernet link. No surprises here. It works.

Next, the team tested how iSCSI can be used to remotely boot a computer without any hard drive or directly attached disks. In this scenario, a Win 2000 box with no hard drive hit a Cisco Catalyst 4000 switch and, via a Dynamic Host Configuration Protocol (DHCP) server software attached to that switch, picked up a standard IP address. Also residing on the DHCP server is Cisco's iSCSI Network Boot software that points the Windows machine to a drive hanging off an iSCSI storage target on the network to remotely boot it. This type of remote booting capability has been available in the Fibre Channel realm for some time.

While the iLabs team only demonstrated that this remote boot application would work with a single server, the technology could be used to let a large number of servers, such as blade servers in a rack-mounted chassis, boot up from a single storage system.

"Think of the administrative implications of that," says Mike Frase, an iLabs engineer and a Cisco technical support engineer. "Any time you need to change security parameters or modify applications, you just make those changes once and they get populated to your remote servers when they boot up."

The iLabs storage team also tested how iSCSI can help deliver video on demand across IP networks. The team stored video clips on an IBM Total Storage FAStT500 Fibre Channel storage device attached to a Cisco MDS 9216 multilayer fabric storage switch that sports Fibre Channel and iSCSI interfaces. On the other side of the IP cloud sits a video server and a client PC. The client machine requests a video feed from the server, which downloads the stored clips using iSCSI over the Gigabit Ethernet network.

On that same test bed, the team demonstrated how iSCSI could help deliver a video surveillance application. A digital camera feed sent images through the IP network to a desktop where you could view the images live and to the IBM storage device, where they could be saved to disk. The surveillance video then is made available to a second PC with a 10-minute delay. By saving these images to disk and then using iSCSI to deliver them back over the IP network, the viewer gets easy, precise access to a video without weeding through piles of video tapes.

tal certificate, and that's probably not a good assumption for many of today's networks. Conventional wisdom for wireless vendor lies in the belief that most network managers will want to incorporate 802.1X-based security measures into an existing authentication system, such as username/password or token-card schemes. Unfortunately, that's not easy to do securely.

PEAP vs. TTLS: A bad competition

Two competing proposals that help to integrate legacy authentication into 802.1X are TTLS, proposed by Funk and Certicom; and PEAP, proposed by RSA Security, Cisco and Microsoft (For details of PEAP and TTLS, see www.nwfusion.com, DocFinders: 5530 and 5531). While neither proposal has advanced to standards status, many vendors have implemented both.

Finding a compatible inner authentication method, such as MS-CHAP-V2 or One Time Password, within PEAP and TTLS is not easy. Because PEAP doesn't allow for a simple username/password mechanism required to authenticate against an existing user database with encrypted passwords, such as Unix or a Lightweight Directory Access Protocol directory, vendors have tried to shoehorn this into PEAP authentication methods. The results are predictable: Every vendor has a different approach, and that translates to interoperability failures.

TTLS has the opposite problem: There are too many ways to do the same thing. So if you want to authenticate against a Microsoft authentication database with MS-CHAP-V2, there are two ways to do it — and not every vendor allows for both possibilities.

Because TTLS and PEAP are technically equivalent, having both on the table at this stage of the 802.1X implementation is a major roadblock to interoperability. During the testing, we found different vendors have implemented different drafts. Even Cisco and Microsoft — the two vendors driving PEAP, have chosen an incompatible set of inner authentication methods, blocking total interoperability. Smaller vendors, such as Meetinghouse Data Communications and Interlink, also are being pushed to implement both standards, further diluting development efforts and complicating implementation and interoperability. While time will improve interoperability, having the IETF decide the TTLS vs. PEAP discussion quickly would help even more.

Users who want to use simple username/password have another option. Dutch network security firm Alfa & Ariss has made available a freeware TTLS plug-in, which adds TTLS with Password Authentication Protocol (the simple username/password method) support to Microsoft's built-in Win 2000 and XP 802.1X supplicant. (For a download, go to www.alfa-ariss.com)We tested this freeware and got it to interoperate with the other products tested.

If you want to use TTLS or PEAP to authenticate wireless users, hold off committing to a final wireless security topology for several months until the IETF chooses a final direction.

Setting WEP keys

One plus for 802.1X authentication is that wireless access points maintain a fairly neutral position, mostly packing and unpacking EAP (the inner protocol being carried by 802.1X) packets as the supplicant talks indirectly to a RADIUS server. Inside of EAP are the actual authentication methods, such as TLS, TTLS and PEAP. However, at the end of the process, the RADIUS server has to communicate with the access point to give it enough information to set the WEP keys. Without this final step, 802.1X authentication doesn't provide an encrypted channel.

Our testing discovered a number of cases where the 802.1X authentication succeeded, but communications between the RADIUS server, the access point and the supplicant fell apart. This is a particularly difficult problem to debug, not only because it has to do with moving encrypted data around, but also because all three parties have the opportunity to make errors.

A few vendors also ran into problems during reauthentication tests called for by the iLabs test plan, because these went beyond the normal cursory checks included in most

Renamed MPLS team looks to services

iLabs has a deep-rooted history in testing how well Multi-protocol Label Switching can work for service providers and their corporate customers (see www.nwfusion.com, DocFinder: 5532). After several years of testing basic MPLS support in network gear, the Advanced Internetworking initiative iLabs team is looking upward at the technologies and services that can be delivered across MPLS-based networks. The team is targeting how MPLS can carry VPN tunnels, enable quality-of-service technology, and meet the demands of delivering IPv6 traffic.

> While time will improve interoperability, having the IETF decide the TTLS vs. PEAP discussion quickly would help even more.

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iLabs,
continued from page 64

interoperability tests. As with IP Security, reauthentication is a problem that's hard to test for, but can cause major user dissatisfaction and interoperability failures down the road.

Virtually all the vendors failed one test:

setting a short, 40-bit WEP key. While most products support the widely accepted 104-bit WEP keys, 802.1X compliance calls for 40-bit keys. If you jumped on the wireless bandwagon early and bought cards that only support the shorter key length, you might want to consider replacing any 40-bit-only equipment during your 802.1X rollouts.

Is it standard or not?

Because 802.1X, EAP, TTLS and PEAP are relatively young standards — TTLS and PEAP are still drafts — there is not complete agreement on how to interpret and implement them. We coached a number of vendors through practices such as rekeying sessions, timing of Dynamic Host Configuration Protocol requests, virtual LAN (VLAN) switching and certificate management.
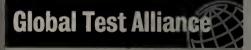
Although these implementation choices, such as how to select a VLAN for an 802.1X user, wouldn't necessarily cause failures, they could mean that network managers are getting something different from what they bargained for, at least until the participating vendors begin to converge on one approach and agree formally and informally.

This problem wasn't specific to any one kind of vendor. Some of the newest wireless switch vendors that haven't even announced products had standards interpretation issues. However, their commitment to send engineers to the test event paid off. Aruba Networks and Trapeze Networks were able to quickly update their software overnight to help increase total interoperability with other vendors. The biggest players, including Microsoft, also found that their implementation of the standards and drafts didn't match everyone else's.

Most vendors told us that they will follow two paths: whatever the standard says, or if that's not enough, whatever it will take to interoperate with the big guys. Because Microsoft is providing an 802.1X client in Win 2000 and XP, most consider Microsoft's PEAP implementation a reference they must match. This is good news for customers who are counting on built-in support in Windows and want to use the PEAP path for authentication.
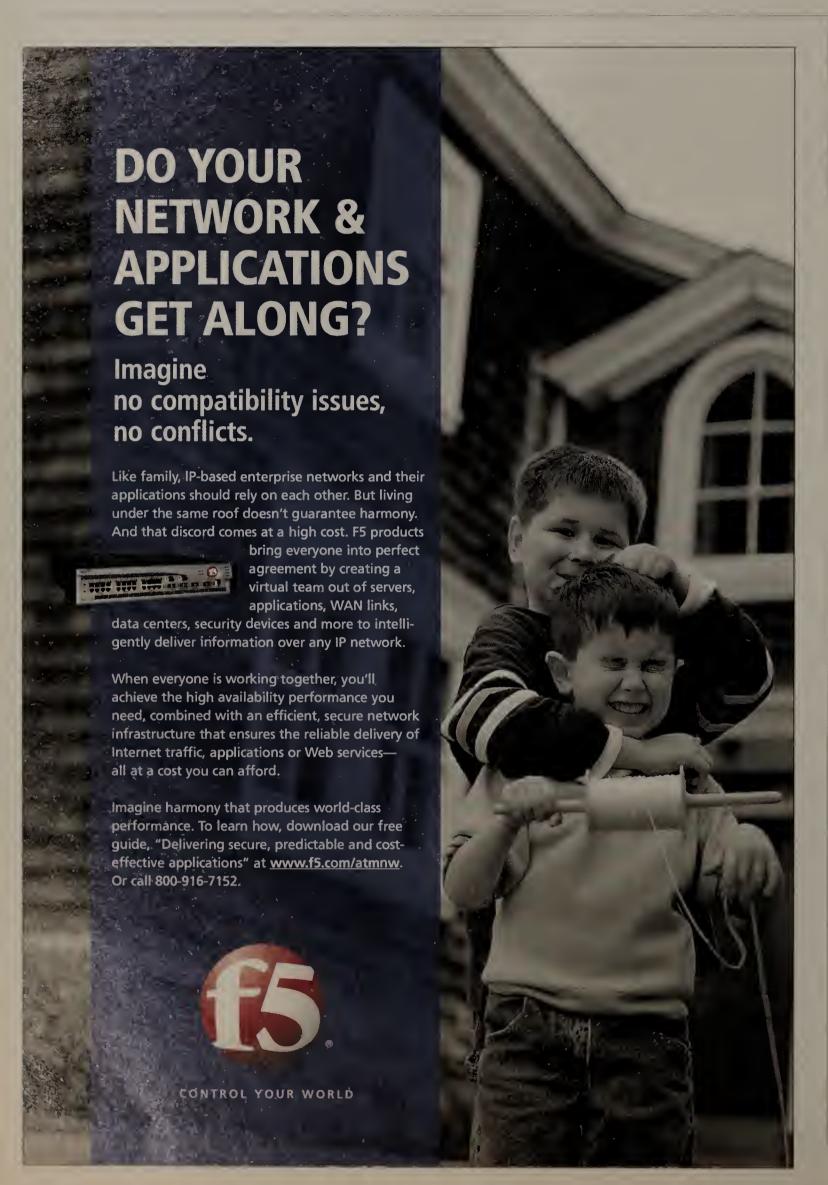
Although the iLabs testing showed that 802.1X interoperability isn't a foregone conclusion, the number of vendors and their enthusiasm towards interoperability says that 802.1X certainly can be factored into your wireless plans.

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NetworkWorld Review

WatchGuard Firebox V200 firewall/VPN

SOHO vendor moves into high-end arena

■ BY DAVID NEWMAN, NETWORK WORLD GLOBAL TEST ALLIANCE

WatchGuard Technologies, a leader in small office/home office firewall/ VPN appliances, is targeting the big boys with a high-end device aimed squarely at Cisco's PIX 535 and NetScreen Technologies' NetScreen-5200.

On the plus side, the $60,000 device is a lot less expensive than competing products from Cisco, NetScreen or Nokia, and its management graphical user interface will be familiar to users of other WatchGuard products.

And in our tests, WatchGuard's V200 set up an impressive 42,000 concurrent IP Security (IPSec) tunnels, a useful capability when dealing with huge numbers of dial-up users in an corporate setting.

But on the minus side, the latest beta unit bore out the adage that security always comes with a performance cost. Even with a much-reduced number of IPSec tunnels in place, the V200's latency and throughput were much degraded compared with its performance when configured as a firewall.

The V200 offers firewall, VPN and network address translation via two Gigabit Ethernet interfaces. The V200 also offers Border Gateway Protocol routing and two out-of-band interfaces for high-availability applications.

We assessed the V200 with seven different performance measurements (see how we conducted our test at www.nwfusion.com, DocFinder: 5628). Besides determining IPSec tunnel capacity, we also measured latency and throughput with IPSec configured and with two and 1,000 firewall rules in place.

IPSec tunnel capacity

We established 42,000 tunnels using Spirent Communications' SmartBits analyzer running TeraVPN test software. These were fully formed tunnels that dial-up users would build when connecting through a V200. Each tunnel consisted of an Internet Key Exchange (IKE) session and pair of one-way security associations.

It's important to apply this three-element definition of tunnels — one IKE session plus two one-way security associations — when assessing VPN gear for dial-up use. A common trick in VPN specsmanship is to set up impressively large numbers of security associations but neglect to mention that all security associations were set up with one IKE session.

The issue is that many IPSec devices employ high-speed silicon for encryption but not for key exchange. The V200 has eight ASICs for acceleration of key exchange, encryption and firewall rule processing.

The V200 offered impressive tunnel capacity, but the beta version shone a bit less brightly when it came to moving packets through those tunnels. We measured throughput with 42,000 pairs of security associations between a pair of V200 devices, and we also tried a few test runs with 4,096 concurrent tunnels, but there wasn't any traffic level we could offer where packet loss was zero.

This isn't to say that the V200s can't forward traffic through all 42,000 pairs of security associations. In some cases (such as with 1,440-byte frames, the optimal length for IPSec testing), the amount of packet loss was trivial. Nonetheless, the Internet Engineering Task Force defines throughput as the highest rate with zero loss.

Our workaround for the latency and throughput tests was to scale back to 64 pairs of security associations (all done with one IKE session, a limitation of the back-to-back device configuration we used). In that less-stressful configuration,

Figure 1: WatchGuard Firebox V200 latency

Average latency is four to six times higher when the V200 is configured as an IPSec gateway than when it serves as a firewall. There's not much difference between average latency for 1,440- and 1,518-byte frames, even though the latter are fragmented and reassembled.

Latency across two systems; lower numbers are better
Average latency (microseconds)
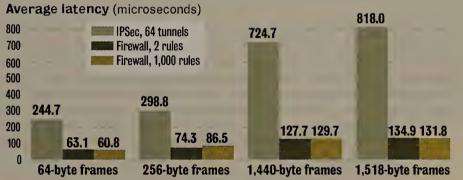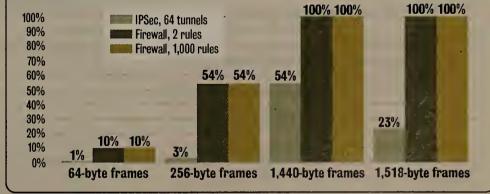
Figure 2: WatchGuard Firebox V200 throughput

Although throughput declines sharply when the V200 handles short or medium-length frames, the results are identical even when a large number of firewall rules are configured. As with the latency tests, enabling IPSec on the V200 has a negative impact on throughput.

Throughput across two systems; higher numbers are better
Throughput (percentage of theoretical maximum rate)

the V200 forwarded traffic without loss.

Dealing with delay

We measured latency and throughput in three configurations: with eight pairs of IPSec security associations configured between V200s; with IPSec disabled and two firewall rules in place; and with IPSec disabled and 1,000 firewall rules in place.

Latency is higher with IPSec enabled than without it — about four to six times higher (see Figure 1, above). The most pronounced increase was for 1,518-byte frames, the maximum length allowed in Ethernet. We observed average latency of 818 microsec across a pair of V200s.

Added delay for maximum-length frames is not surprising, considering that IPSec's encapsulating security payload method fragments and then reassembles these frames. Given the added processing involved, an extra 100 microsec of latency — 818 microsec vs. 725 microsec for unfragmented 1,440-byte frames — is not a huge increase.

Latency with IPSec disabled, but with firewall rules enabled, was far lower. More impressive still was that latency was essentially the same with two firewall rules configured or 1,000 rules. That's because the V200 loads all firewall rules onto its ASICs.

■ Net Results

WatchGuard Firebox V200

Company: WatchGuard Technologies, www.watchguard.com **Cost:** $60,000. **Pros:** New hardware supports very large numbers of IPSec tunnels; no performance hit for large number of firewall rules. **Cons:** Late beta hardware and software exhibited elevated packet loss and latency with IPSec configured.

Testing throughput

Throughput, like latency, is lower on the V200 when IPSec is enabled than when it's acting purely as a firewall. In this test, there was a significant throughput difference depending on whether the V200 had to fragment frames (see Figure 2, page 69).

With maximum-size 1,518-byte frames, which get fragmented, throughput was equivalent to about 23% of line rate. With 1,440-byte frames, which IPSec doesn't fragment, throughput more than doubled to the equivalent of 54% of line rate, or nearly 533M bit/sec.

The V200's throughput compares favorably with the 440M bit/sec claimed by Cisco for its flagship PIX-535 in a similar configuration, but it's less than the line-rate numbers NetScreen cited for its flagship NetScreen-5200 line.

The throughput picture was brighter when we configured the V200 strictly as a firewall. For all frame lengths, throughput with 1,000 rules in place is virtually identical to throughput with just two rules configured. WatchGuard credits the V200's ASICs for the fact that firewall rules have essentially zero performance cost.

However, there is a substantial performance cost when it comes to pushing medium- and short-length frames through the V200. When handling 1,440- and 1,518-byte frames, a pair of V200s configured as firewalls will forward traffic at line rate without loss. When forwarding 256-byte frames, the highest rate at which the same configuration will move traffic without loss is equivalent to about 54% of line rate. With minimum-length 64-byte frames, throughput falls to the equivalent of 10% of line rate.

Given that the average frame length for TCP/IP traffic is close to 256 bytes, and that TCP packets must receive 64-byte acknowledgement frames in return, it can be said that the V200 will deliver more than adequate throughput on networks with light to medium loads. Users on heavily utilized segments might experience packet loss.

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Network Test and Network World thank Spirent Communications for supplying its SmartBits test system and TeraVPN software, and for helping develop and troubleshoot the scripts used. Special recognition goes to Spirent's Bob Anderson, Eddie Arrage, Paul East, Debbie Landis, and Davison Zhang. Thanks, too, to Extreme Networks' Huy Nguyen, who supplied Summit workgroup switches for the test bed.

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Management Strategies

Customized collaboration

Navy unit replaces outdated database with Web-based system that gives users control of information.

BY JOHN FONTANA

By its very nature, the U.S. Navy is infused with units that think and act in an established and tactical way, which might not be the best environment for rolling out new software.

But it was in that atmosphere that the Navy's Tactical Information Technology Integration Program Office (TacIT IPO) rolled out Web-based collaboration software to create its Secure Information Management Environment (SIME). The program management system supports two missile programs that are a collaborative effort among 112 organizations. The software provides threaded discussions, document sharing, workflow, chat and instant messaging.

TacIT IPO deployed the software nearly three years ago to replace an aging and costly database-collaboration system that had limited sharing capabilities and required users to funnel new documents through a centralized administrator for posting.

While TacIT IPO can't reveal what it spent to deploy the system, the total cost of ownership is lower than the previous system,

which required more applications and administrative overhead.

TacIT IPO, which provides IT solutions to a variety of Navy offices, has just completed Department of Defense security certification of SIME, which is built on SiteScape's Forum software running on Netscape Web Server software and serving nearly 3,000 users. Now TacIT IPO is actively recruiting other units of the Navy and branches of the military to adopt its model of Web-based program management.

"The Navy is recognizing that a lot of these business practices that have occurred for years and years have not changed and they want to be more up-to-date with the way work is done," says Jeffrey Thompson, technical services director for TacIT IPO. "Today, if you are going to be in the Navy and running on Navy networks, you are going to be Web-enabled, but you still run into outfits resistant to that change."

The first order of business for TacIT IPO was to replace its government off-the-shelf (GOTS) software with commercial off-the-shelf software from SiteScape. GOTS is home-grown software that is notoriously difficult to manage, maintain and modify, Thompson says.

TacIT IPO took on the challenge of switching systems by customizing SiteScape Forum to closely mimic the look and feel of GOTS software to minimize retraining, and then hooking users with new collaboration features.

"We elected to do the implementation this way so that when the end users came in to work on Monday after the migration, they would not have 'shell shock' from a new system they were not familiar with," says Sandy Grove, information services director for TacIT IPO.

With SIME, users can input and update the data, eliminating a bottleneck of the original software. The new system also added individual teamwork areas, workflow, more detailed action item consolidation/input, in-line CAD viewing and e-meetings.

The Navy also chose SiteScape because the vendor's browser-based client integrates with the Defense Department's public-key

infrastructure model for security, which provides certificate-based single sign-on. The integration has been a blessing because TacIT IPO does not have to provide or maintain the security infrastructure, Thompson says.

Another challenge for TacIT IPO was working within the Navy/Marine Corp. Internet (NMCI), an entity established as part of a federal project to standardize desktops, servers and network connectivity. Although not a part of NMCI, TacIT IPO is required to incorporate NMCI's standards as part of SIME, which means SIME's desktop client had to be a Microsoft or Netscape browser and SiteScape had to support mandated ports and protocols.

NMCI also mandates Web-based infrastructure, which was a plus because it ensured SIME could traverse firewalls within the military and those of outside contractors. "NMCI puts an infrastructure in place that we don't have to build; we just ride on top of it," says Phillip Butch, program manager of TacIT IPO.

With the regulations met and the infrastructure in place, TacIT IPO had three people working three months with SiteScape engineers to craft the interface and methodology behind the system. The software was rolled out over a weekend.

Today, three technical staff members and three help desk workers maintain SIME. Twice a year, TacIT IPO brings roughly 20 of SIME's power users in for a round-table discussion about needed upgrades. The first year the round table requested 40 modifications, but as of late last month that number was down to one.

"One of the challenges had been keeping up with the user demands, but now the system is maturing," Thompson says. "This is truly a user-driven tool, and they are the ones that make the changes."

The users have produced one significant add-on module called Tactical Calendar, Action-item and Meeting Management, which fulfills the Defense Department's critical program management requirements because it gives officers a high-level view of which projects are on-track and which managers are accountable for those efforts.

IT maintains the Netscape Web server that supports SiteScape Forum and five Microsoft SQL Server databases that house supporting documents, discussion threads and other data. The entire platform runs on Windows 2000 and NT.

The staff also maintains a Netscape Directory Server authentication, a Netscape Messaging Server for e-mail notifications and a Veritas back-up server that can restore full system function in less than four hours.

"For a lot of people in the [Defense Department] and Navy, becoming Web-enabled is a challenge," Thompson says. "But we have already met those challenges. The big thing now is to make other organizations understand that there is a better way to do business and have them want to make a change, and that really has been hard for us." ■

Left to right: Jeffrey Thompson, Sandy Grove and Phillip Butch of the Navy's TacIT IPO invested three months customizing SiteScape's collaboration system to meet the Navy's needs.

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IT Careers: Industry Drives Online Degree Trends

More than 20,000 people in the United States are finding a new way to quickly morph current skills into emerging job requirements. Colleges and universities are using online coursework to stay in step with rapidly developing technologies, pushing online curriculum that in the past would have taken years to develop. From data mining to infrastructure security and systems networking, the new degree programs are allowing IT professionals to transform with the industry.

These aren't diploma mill programs, either. Universities ranging from Stanford University to Massachusetts Institute of Technology, from Boston University to James Madison University and the University of Missouri-Rolla, are enrolling students for classes conducted via the Internet. "Traditionally, residential universities and colleges have been slower in meeting emerging technology needs," says Vicky Phillips, author of *Best Distance Learning Graduate Schools-Technology 2003*. "We're noticing that schools are choosing to put newer concentrations, such as cyber security, online to be market responsive."

Tanya Zlateva, chairman of the online computer science graduate program at Boston University, says demand for online courses follows the IT industry trends. "We offer a blended program of four face-to-face meetings during the semester and web-based learning," Zlateva says. The university added an IT security focus to its graduate programs this year, and will offer a full concentration IT security program beginning Fall 2003. "It's relatively easy to put material online," she adds. "But by adding streaming video and interaction, access to lab work online and other facets, the program has greater value."

However, online study isn't for everyone, cautions Phillips. Top on the list to consider: your own learning style. If you've taken online, CD-ROM or correspondence courses in the past, you know whether you're up to it. "You need good time management skills and self-motivation," says Phillips. "It's a large psychological factor." Phillips' research indicates retention rates for online students are slightly – though not significantly– lower than those in on-campus programs.

Secondly, look for accreditation by the regional association accrediting schools and colleges for the main campus, as well as any other accreditations, such as those for business, engineering or technology. If the accreditation isn't from a group belonging to the Council for Higher Education Accreditation (chea.org), you may want to reconsider. Then find out how much you'll interact with faculty and other students. You may need access to a satellite link-up or to travel to campus. Usually students in an online class interact via bulletin board or through conference calls. The more you interact with students and faculty, the more likely you'll stay in the program.

Financial assistance is another factor. Not all online programs qualify for low-interest student loans, nor do all corporate reimbursement programs apply. Public universities frequently apply in-state tuition/out-of-state tuition rates just as they would for resident students. Some, however, have a single distance-learning tuition structure. In terms of cost, compare overall tuition costs, the value of a national brand name degree, and the cost of access – visits to campus or satellite links, for example.

"We haven't yet seen the peak in enrollment for online degree programs," predicts Phillips. "With learning, once is not enough."

IT Careers

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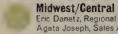(508) 460-3333/FAX: (508) 460-1237

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RFID

information stored on the chips. The decades-old technology — it was used to track aircraft during World War II — powers Exxon-Mobil's Speedpass payment system, for example. It's also commonly used for luggage tagging systems at airports and highway toll collection systems.

The retail and consumer goods industry has been abuzz for the past couple of years about RFID's potential to improve supply-chain processes, and momentum is growing. At an AMR Research retail and consumer-goods conference this month, 63% of 250 attending executives said they are evaluating electronic product codes enabled by RFID technology.

For retailers and manufacturers, RFID provides an alternative to traditional bar codes; garment tags embedded with tiny chips and antennas store information relating to an item's style, size, color and intended destination, for example.

Getting ready for RFID

RFID promises improvements in supply-chain operations and customer service, but there are technical and philosophical hurdles to overcome.

Advantages
- Cuts the cost of performing physical inventory checks.
- Enables better stock replenishment on store shelves.
- Reduces theft and fraud through item-level tracking.

Obstacles
- Privacy concerns.
- Lack of standards, multiple transponder frequencies.
- Too few tools for managing data that RFID generates in conjuction with other enterpise data systems.

But whereas bar codes must be read one at a time by devices within line of sight, RFID tags can be read when they're sitting in closed boxes. In addition, RFID readers can scan multiple items at once. Instead of unpacking and counting every item in a shipment by hand, a warehouse employee could scan the entire contents of a sealed box in one pass.

The allure of using RFID in the supply chain is greater visibility. With RFID-outfitted merchandise

— and a means to extract data from RFID systems and feed it to enterprise sales, inventory and warehouse management systems — retailers and manufacturers could track products from distribution centers to store shelves in order to reduce out-of-stock conditions and trim warehouse operating costs. Ideally, sales and supply-chain information would be available in real time to retailers and manufacturers responsible for estimating

merchandise demand.

Companies including CVS, Gap, Procter & Gamble and Wal-Mart have announced RFID pilots over the past several months. However, large-scale RFID deployments by retailers and their suppliers are virtually nonexistent. When it was announced in March, the Philips-Benetton deal was big for the industry.

"By purchasing 15 million RFID-chipped tags from Philips, Benetton becomes the first retailer to push item-level RFID out of pilot and into its 5,000 stores," Forrester Research said.

But now Benetton appears to be retreating from its RFID endorsement after privacy objections. This month the company declared that no microchips are present in the garments it produces and sells, and that it hasn't made any decisions about using RFID. Benetton acknowledged in a statement that it is analyzing RFID technology but emphasized "that no feasibility studies have yet been undertaken with a view to the possible industrial introduction of this technology."

"On completion of all studies on this matter, including careful analysis of potential implications relating to individual privacy, the company reserves the right to take the most appropriate decision to generate maximum value for its stakeholders and customers," Benetton's statement read.

Adding to the cloud forming over RFID is a technology hiccup that another high-profile RFID adopter, Gillette, is experiencing.

Gillette bought 500 million tags — reportedly for less than 10 cents per tag — from Alien Technology. The deal encouraged industry watchers, hoping the price of RFID tags just might get to the sought-after nickel-a-tag level believed to be necessary for widespread adoption.

But at an IdTechEx conference on RFID last month, Gillette said the half-billion Alien tags it bought aren't European-compliant and that it is conducting tests with tags from Philips for possible use overseas.

Experts say it's no surprise that multiple RFID systems might be required to meet regional frequency and power requirements. Laws regulating radio frequency differ in Asia, Europe and North America, says Peter Abell, research director at AMR.

"Japan does not even allow UHF, which is the preferred tag frequency here in the U.S. and would probably be the preferred

— but at a lower power — in Europe," Abell says. Companies therefore need to prepare for different frequency requirements of the major continents. "One size doesn't fit all, relative to this technology," he says.

Neither are the privacy concerns raised in the Benetton flap a surprise. Among attendees at AMR's retail and consumer goods conference, 52% indicated consumer concerns about privacy would be the major roadblock in the public's acceptance of RFID.

That both events garnered significant press coverage is an indication that there needs to be better information disseminated about RFID.

"There's been a lot of overhyping of RFID. Some of it's great, and some of it's doing injustice to the industry," says Michael Liard, a senior analyst at technology research firm Venture Development. "We really need to, as an industry, delineate what is real vs. what is potential today with RFID technology."

Meanwhile, progress is being made on privacy and standards fronts.

The Auto-ID Center, an industry-funded research program based at the Massachusetts Institute of Technology (MIT), has developed privacy guidelines for retailers. Some of those guidelines include building a "tag-kill" command into RFID systems; notifying users that electronic tags are present; and providing consumers the option to render a chip nonfunctional.

On the standards front, groups such as Auto-ID Center are working to address interoperability issues. So, too, are vendors. MIT spinout ThingMagic has developed an RFID reader that can handle multiple frequencies and power levels, Abell says.

In the end, neither Benetton's nor Gillette's issues will do permanent damage to RFID, analysts say.

"It's not a setback for the industry," Liard says. "It's just part of the normal maturation process."

The bad publicity won't stall RFID development, says Jeff Woods, principal analyst at Gartner. "There is a risk that if the technology remains overhyped, people will have unrealistic assumptions about the technology and maybe become disenfranchised with [it]," he says. "But the potential reward is so big that we're going to continue to see people very interested in this." ∎

Start-up digs for legal evidence

■ BY DENI CONNOR

AUSTIN, TEXAS — Start-up RenewData is at the center of a ripe and growing business as the result of government regulations aimed at uncovering corporate malfeasance, the company recovers e-mail messages and files that attorneys and their clients need from the hundreds of tapes that businesses keep offsite.

The company's service involves restoring e-mails and files cited in subpoenas that are stored on tape that is often difficult to recover, incompatible and nearly impossible to recover. Because it is difficult for companies to recover data on their own and even harder for them to reconstruct "evidence" from the thousands of tapes and disk drives they archive data on, RenewData's ActiveVault service does it for them.

Using proprietary techniques, RenewData sifts through data, restoring it without duplicating redundant files and searching for pertinent e-mails and files that litigants want. The company then provides the evidence to the customers on whatever method of storage they desire, for them to use in defending against legal actions and documenting how transactions or chains of events took place.

"That's been a hugely inefficient process for the firms that were compliant with the Securities and Exchange Commission Records Storage Rule and had to retrieve their information that was really inaccessible, unindexable and in incompatible, unretrievable formats," says Scott Kursman, vice president and associate general counsel for the Securities Industries Association, an organization that represents the interests of investment banks, broker-dealers and mutual fund companies.

RenewData says that its data-recovery service also

is used by financial industries that have to comply with SEC or other regulatory guidelines for the archiving of e-mail and other electronic documents.

"Companies were not able to produce the material in the time frame people expected, solely as a result of the format they were being required to keep," Kursman says. "That's another pressure point — all these litigation and regulatory pressures. I've seen cases where judges have cited the record-keeping parties in the litigation for failure to conduct discovery on a prompt and efficient basis."

RenewData also is working on a hardware-software package called ActiveVault Enterprise to solve the problem of handing customer data that they can't do anything with after the litigation is past. The package would consolidate current e-mail and file data with that of data RenewData has recovered. ActiveVault Enterprise will be based on network-attached storage gear and present current archived e-mails to the user with metadata references, by which they can build rules to query the stored content to find e-mails relevant to legal inquiries. It works to retrieve data required by SEC audits or the Sarbanes-Oxley Act of 2002, which affects the accounting practices of publicly owned companies.

ActiveVault Enterprise will continue to deduplicate data and store metadata references for it in an Oracle 9i database. Attorneys for companies then can access the data, extract documents that are pertinent to subpoenas or discovery orders, thus saving money and time in discovery costs. ActiveVault Enterprise will be priced on the number of terabytes stored and is expected to be available this summer.

RenewData's service competes against services provided by Ontrack Data Recovery, 911 Forensic Data and the Data Recovery Group. ∎

ERP

tackled are getting attention as companies try to squeeze inefficiencies out of their existing ERP systems, says Bill Swanton, vice president at AMR Research.

Over the years companies have deployed multiple versions of their ERP software, in part because ERP in its early days was a site-specific effort and the software was difficult to scale to very large organizations, Swanton says. Products were limited in the number of different languages, character sets and country-specific regulations they could support on the same instance.

So companies deployed separate applications for different regional offices or business units, each of which made configuration decisions according to local practices — a division in Europe might compute the cost of goods sold differently from a division in Asia, for example. Heavy customization was common.

"Companies didn't want to go through the hassle of trying to get everyone to agree on how to do stuff, so each group grabbed their licenses and ran and did their own thing," Swanton says.

It's particularly common among Oracle users to have rolled out multiple ERP versions — but it's not limited to Oracle customers,

Swanton says. Users of other ERP software face many of the same implementation complications. (See related story, below.)

Cleanup time

"Your ERP system should be something you don't even think about," ViewSonic's Moon says. "Do you think about your refrigerator running? No. Are you worried your car is going to start in the morning? No. Your ERP system should be the same way. Companies that have to worry about their ERP systems are doing something wrong."

One advantage of migrating to a single, global ERP instance is greater visibility into a company's worldwide operations. A timely view of global inventory statistics, for example, could eliminate the common paradox wherein a company has one of its factories paying a supplier certain prices to get a part that's in oversupply in another factory, Swanton says.

Another draw for multinational companies is the ability to implement shared services organizations for financial functions, instead of supporting duplicate departments, such as accounts receivable and accounts payable, in dozens of countries. Consolidating financial functions could let companies reduce their financial staff by 40% to 60%, Swanton says. "Those are big, per-

manent savings," he says.

Engineering change

CH2M Hill is in the early stages of its instance consolidation project. But it's been a long-time goal of the Englewood, Colo., firm, which provides services including planning, engineering design, construction and project development.

"We had a vision of someday going to a global instance," says Jim Butt, IT director for MIS at CH2M Hill. "And Oracle had a lot of ideas about where they wanted to take their applications that were consistent with our vision."

But first CH2M Hill had to wait for the technology to catch up to its vision.

CH2M Hill licensed Oracle's financials, projects and purchasing software in 1993. Today the firm runs four different instances of Oracle software, three in the U.S. and one in Canada. One of the U.S. instances is new — Version 11.5.7, running in CH2M Hill's Denver data center — and is set to become the company's global platform.

While Oracle for some time has offered strong multinational capabilities in its financial applications, CH2M Hill needed robust multiorganization capabilities built into Oracle's project costing and billing modules, Butt says. "The center of our universe is a project," he says. "We really

needed that functionality down in the projects module."

Specifically, CH2M Hill wanted tools to simplify project accounting procedures required when the company's subsidiaries do work for one another — which happens a lot, Butt says.

About two years ago, Oracle delivered. Cross-charging capabilities built into Oracle's current applications will let any subsidiary make charges to a project owned by a different subsidiary, and all the accounting is done automatically, Butt says.

The firm's old way of accounting for intrasubsidiary services is more complex. Five years ago, CH2M Hill built a customized "affiliate billing" system that operates like an exchange mart through which any of CH2M Hill's entities can buy and sell from each other, Butt says. "It takes a lot of transactions and a lot of time," he says. "It has served us well, but now we can have the real thing."

Before attempting to consolidate its Oracle instances, CH2M Hill tackled a different migration. Last October the firm moved 40 subsidiaries that were using J.D. Edwards software to a single instance of Oracle 11.5.7. What's left to do is move the company's three remaining Oracle instances over to this new platform, which CH2M Hill hopes to accomplish by year-end.

"We're going to have one instance, globally, for human resources, payroll, projects, purchasing and financials," Butt says.

Prioritizing process

Like CH2M Hill, ViewSonic made process makeovers the centerpiece of its instance

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Is ERP consolidation an Oracle phenomenon?

Instance consolidation is popular among Oracle customers for a few reasons, says Bill Swanton, vice president at AMR Research. For one, users tended to roll out Oracle software in a fragmented way — Oracle basically encouraged companies to implement its software site by site and even department by department, he says.

In its early days of offering ERP software, Oracle didn't have mature multinational features. "Until seven or eight years ago, Oracle really couldn't have supported this kind of implementation," Swanton says.

And lastly, quality problems with Oracle 11i kept companies from upgrading over the last two years, which means many companies are running old versions of Oracle software. As the vendor prepares to freeze support for Version 10.7, a lot of Oracle users are contemplating upgrades, Swanton says. "When they're looking at upgrades, they're looking at consolidation," he says.

As customers considering ERP con-

solidation need look no further than their vendor for inspiration: Oracle is nearing completion of a four-year effort to slash the number of instances it supports from 70 to one.

"We started with over 70 financial instances, basically one per country. Each ran on separate boxes with separate databases," says Bret Fuller, senior vice president of IT for applications at Oracle. Oracle has whittled its systems down to three instances, and in October it will have one, global database for all of its financial systems. (Read the full story online at www.nwfusion.com, DocFinder: 5660.)

Compared with Oracle users, there are fewer SAP customers undertaking instance consolidation, Swanton says.

But they do exist. "There are plenty of people looking at it in SAP, but it's very much an Oracle phenomenon," he says.

One reason instance consolidation projects are less common among SAP users is

that SAP has preached the benefits of global ERP longer than its peers. SAP was the first ERP vendor to start talking about one multinational system, at least 10 years ago, Swanton says. "Quite frankly, what drove a lot of large, multinational companies to jump on the SAP bandwagon very early is that they could have this idea of a global system," he says.

ERP consolidation projects also are less common among users of PeopleSoft, which has its roots in human resources. The vendor's human resources software was conceived to consolidate workforce-related tasks companywide, so users tended to implement its software as single instances, Swanton says.

Many J.D. Edwards rollouts could be ripe for instance consolidation, once the vendor's globalization features mature, he says. "They're just at this point getting ready to be able to deploy on a really global basis," Swanton says.

— Ann Bednarz

Interop

center. NuContact Center is a Linux-based Dell server, running a call-control and call-routing platform based on SIP, and proprietary routing software. The box can be deployed across multiple call centers and used to coordinate voice, e-mail and Web customer service technologies into one system.

A client "dashboard" application for Windows XP combines a SIP-based softphone with CRM interface tools, and Web/e-mail customer interface applications into a view for call center agents. A USB headset is used instead of a desktop IP phone.

Security scene

As always, security will be a hot topic at this show, with several VPN and intrusion-detection vendors introducing wares.

Fortinet and Resilience are adding automated intrusion blocking to their security appliances.

Whereas Fortinet's FortiGates previously have supported intrusion detection and alarming, they now can automatically block the common attacks that they detect. This feature is expected to ship with two new FortiGate hardware platforms that Fortinet is announcing. The company says the feature will be added later to the software of existing FortiGate products.

Fortinet will announce two new versions of its FortiGate security appliances, the FortiGate 60 and FortiGate 1000, which add intrusion-detection and intrusion-protection capabilities to the platform.

FortiGate 60 is designed for branch offices and home offices, and includes a four-port 10/100M bit/sec Ethernet switch and a 70M bit/sec firewall and VPN support with 20M bit/sec Data Encryption Standard encryption. The device has two WAN-facing Ethernet ports for connecting to separate Internet links to back up each other. It costs $1,000.

FortiGate 1000 is a gigabit firewall platform with an IP Security VPN speed of 250M bit/sec. It has four 10/100 ports that are configurable to connect to a LAN or to a secure network segment or WAN. It also has two copper Gigabit Ethernet ports. FortiGate 1000, which costs about $123,000, has a high-availability port that would let two of the devices be tied together as backup.

Resilience will announce that its Check Point-based firewall/VPN appliances also will support Secos intrusion detection. The two software platforms are integrated so that after detecting an intrusion, the Secos software can alter Check Point firewall settings to block it. The software also sends notification of the attack to an administrator for further inspection and logs the intrusion. The Resilience appliances start at about $20,000 and are expected to be available by midyear.

Also at the show, ICSA Labs will announce plans for an SSL certification program that will include evaluating SSL remote-access gear. ICSA has written a high-level outline of the core elements each product must meet and wants to gather input from SSL product developers about what criteria should be included.

The certification program will review products for technical performance and for ease of use, says Brian Monkman, SSL/transport layer security (TLS) technology program manager at ICSA Labs. "You can have all the best security in the world and if it's not easy to use, you can still screw it up," he says.

The new push by ICSA also will include certification for TLS, an IETF-endorsed encryption protocol for IP traffic incorporated in newer versions of Microsoft's Internet Explorer and other products.

The program was suggested by Aventail and other ICSA customers that Monkman declined to name. He says the SSL certification will be ready in the third quarter and is intended to serve the same purpose as its program for firewalls.

Also at the show, Neoteris is announcing an upgrade to its Instant Virtual Extranet (IVE) software that supports all client-server applications over Internet SSL sessions. Remote computers log on to the IVE, and it acts as a go-between with application servers at a corporate site. Previously, IVE had Java-based support for applications, and this adds a Windows-based application proxy.

The upgrade also includes a closer integration with Siebel Systems and Oracle software. This lets employees with the Johnson County, Kansas, government reach Oracle ERP servers from remote locations, something they couldn't do before, says Aaron Goff, security manager for the county IT services department. Before, the county used the IVE for access to file-sharing and Web-based applications for about 200 employees, he says. The Neoteris capability makes it unnecessary to buy the Oracle package that enables remote access.

For securing Web services traffic, Forum Systems will release its Forum Sentry 1500 Version 2.0 appliance. The company has added support for the Security Assertion Markup Language to its list of authorization services. The company also added support for WS-Security and WS-Routing, two emerging Web services protocols. Version 2.0 also features enhancements to the filtering engine and policy framework. Pricing starts at about $35,000.

Network World Multimedia Editor Jason Meserve and Senior Editor John Fontana contributed to this report.

ERP

consolidation efforts.

The first time it implemented Oracle's ERP software, ViewSonic automated existing processes, customizing the software to accommodate local practices, Moon says.

This time around, ViewSonic overhauled its processes before tackling technology. U.S. project team members held weekly conference calls with their counterparts in Europe and Asia to determine common accounting practices. "We spent about two months coming into agreement on these business processes and business structures before we even started any Oracle reimplementation," Moon says.

Process drivers are critical, experts say. Undertaking instance consolidation simply for the sake of technology isn't necessarily a worthwhile thing, Swanton says. "There's probably for most companies a 20% to 25% IT savings" to be gained by instance consolidation, Swanton says. "But that alone isn't going to justify spending the money, because, quite frankly, doing this is the equivalent of reimplementing your ERP system. It's a big project."

Users agree that limiting customization also is critical to a successful ERP reimplementation.

CH2M Hill put huge customizations in place during its initial round of Oracle rollouts, Butt says. "We have close to 1,000 customizations in these four instances of the financials," he says. "Now we're paying the price for getting those all in the same place."

Similarly ViewSonic in its original three Oracle implementations had more than 500 customizations. For its new rollout, ViewSonic adopted a "no customizations" stance, opting to alter its business processes rather than tinker with product code,

66 Companies that have to worry about their ERP systems are doing something wrong. **99**

Robert Moon
Vice president of information services, ViewSonic

Moon says.

In migrating to one instance of Oracle, ViewSonic decommissioned about $1 million in hardware and slashed its IT staff. When Moon arrived there were 36 people in the IT organization responsible for maintaining Oracle systems. He cut it to 14 people before even starting the new implementation.

"People here were sort of shaking their heads," when he cut that many Oracle experts, Moon says. "They didn't know if I knew what I was doing or not, but they discovered I did."

CH2M Hill, too, has realized efficiencies — even though it's still early in its instance consolidation project. Migrating 40 business units from the J.D. Edwards software to one instance of Oracle has simplified the day-to-day work of IT and finance staff. "There's a lot of business process simplification that comes out of this," Butt says.

Down the line, getting to a single, global instance will free IT staff to do more in other areas, Butt says.

"That's really what the executive management of our company is striving for — they want us to do more with the same resources," he says. "As the company grows, they don't want the infrastructure to have to grow." ∎

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BackSpin Mark Gibbs

Scams to scumware

Devious. Duplicitous. Dissembling. Disingenuous. These are not words that anyone wants to have others use about their behavior. Yet that's exactly the description for people on the 'Net who seem willing to do anything to make a buck.

The people who regularly tick me off are (no surprise here) the spammers, those low-life imbeciles who will do anything to get your attention. What really gets me going are the subject lines they use like: "Re: your refinance application."

Like I wouldn't know that I didn't apply to refinance my house.

Spam is without doubt our biggest communications problem and will remain so for a long time, but my latest accumulation of venom is for those companies who push scumware.

Scumware, a topic that I last wrote about in 2001, has been on my mind since I got hold of a copy of SpySweeper, published by WebRoot Software.

Scumware (also known as spyware, parasites and several more colorful but unprintable names) is software that either displays advertisements (this is called adware), or goes further and tracks and reports on your Web browsing, your keystrokes or anything else the author has some interest in knowing (this is spyware).

Adware is the most common form of scumware. Shareware or freeware authors often use it to generate revenue from their software. The authors build third-party adware components into their programs to display ads and get a cut of the ad revenue. Ads are displayed when the software is running and, in some cases, also when it isn't.

Adware can be very devious. The notorious Gator from Gator Corp. actually hijacks Web banners when they are displayed in your browser and shows its own banners! At best, that is ethically dubious.

Scumware can be responsible for all sorts of nasty things. It can make your system unstable, degrade system performance, create scores of copies of itself to make removal difficult, force your browser's default home page to point to a site the scumware is promoting, add advertising links to Web pages, make your modem call premium-rate phone numbers and create major security holes in your system.

I thought I was careful about what I allowed onto my PC, but the first time I used SpySweeper I found 14 traces of scumware code (rather than cookies), which included five copies of Bonzi Buddy, six copies of Liveperson and one Webhancer.

Whether you agree that these particular products are scumware, the fact that there are multiple copies of many of these programs is very suspicious — are the programmers so pathetic that they can't detect a previous installation or are they trying to do something else, such as ensure that getting rid of the scumware is as difficult as possible?

As for Webhancer, it collects the URLs of visited Web sites, records how fast they load and sends that data to Webhancer's servers. Webhancer can execute code loaded silently from the company's servers, and if you try to remove Webhancer, you'll often find that networking stops working (Webhancer messes with registry entries).

In a corporate environment that isn't locked down, scumware can be found on most PCs because users don't read end user license agreements (EULA), and even if they did, they probably wouldn't understand the implications.

But what I find reprehensible is that a lot of scumware is installed by trickery. Gator offers users a utility that "synchronizes your computer's clock to the U.S. Atomic clock ensuring you have the correct time," but unless you read the entire EULA you won't know that you also are installing Gator's ad-serving software. Worse still, that EULA can be buried under a EULA for another product or service.

In a corporate environment the implications of scumware are huge when you consider the PC stability and security issues involved.

Explanations to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

A report from the file-swapping front

Verizon has a point about the disputed subpoena, even if you believe — as I do — that the recording industry is fighting the good fight to keep large-scale file swapping from eviscerating the intellectual property rights of musicians.

Verizon is balking at a judge's decision issued earlier this year — and reaffirmed by him last week — that it must provide the identity of a Verizon Online customer to lawyers for the Recording Industry Association of America (RIAA). The customer was allegedly running a Napster-like service. The ISP is not claiming that it has no obligation to disclose such information — it's done so in the past, for example, in spam-related cases. Instead, Verizon contends such subpoenas should require more stringent court oversight than was the case here.

The matter isn't clear-cut, as can be gleaned from reading a Deloitte & Touche report on file-swapping issues at www.nwfusion.com, DocFinder 5649.

Getting an ISP to cough up the identity of a customer should be difficult . . . not impossible, but difficult. This should be so not only because the customer has privacy rights, but also because ISPs deserve protection from trivial requests and fishing expeditions. Requiring that a subpoena seeker get a judge's OK — as opposed to a court clerk's rubber stamp — would strike a reasonable balance.

As for the broader issues regarding file-swappers, much remains unresolved. The law is not of them, though, putting aside that subpoena dispute. The various theories defended over the years by music-swapping apologists have held up in court about as well as Iraq's Elite Republican Guard did in Baghdad. And that has left the RIAA critics with a fallback position that boils down to something like this: "Sure, the courts have said these services are illegal if they aren't licensed.

And sure it's not our money. But the recording industry ought to surrender anyway because, well, because tens of millions of people have downloaded free music and tens of millions of people can't be wrong."

Another argument holds that if someone in the industry would do this right — give music fans what they want, the way they want it, at a reasonable price — those fans who now filch their tunes would be perfectly willing to give up the freebies and pay.

However, as the Deloitte & Touche report notes, the pay services are proliferating and getting more attractive all the time, yet fewer than half a million people are ponying up for downloads. In other words, what people tell pollsters they're willing to do and what they're actually willing to do are not necessarily the same thing.

Which means the RIAA still has a huge problem to solve.

If you're militant one way or the other on this issue, the Deloitte & Touche report is unlikely to sway you.

However, the reasonable middle might find it enlightening.

An editor throws down the gauntlet

The challenge from my editor was irresistible: "Paul, I challenge you to work this word into 'Net Buzz."

The editor gets that "word of the day" e-mail from Merriam-Webster. . . . He didn't say I couldn't make up stuff, so here goes:

"That last Blue Screen of Death will be the *last* Blue Screen of Death," Jones shouted mere seconds before tossing his PC out the window in an act of cathartic defenestration that years later still draws whistles of approval any time network executives gather.

Defenestration \dee-feh-nuh-STRAY-shun\ noun: a throwing of a person or thing out of a window.

You can toss comments and questions to buzz@nww.com

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